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Contents

MANAGEMENT OF RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE.
Benedict F. Massell, M.D., Boston, Massachusetts. 633

ABDOMINAL HODGKIN'S DISEASE.
W. O. B. Nelson, M.D., and *L. A. Dwinnell, M.D.*, Fergus Falls, Minnesota..... 647

CLINICAL SIGNIFICANCE OF GROSS HEMATURIA.
Laurence F. Greene, M.D., Rochester, Minnesota.. 651

EXPERIENCES IN THE TREATMENT OF VOLVULUS OF THE SIGMOID.
Charles E. Rea, M.D., Saint Paul, Minnesota..... 653

EXPERIMENTAL STUDIES OF LIVER AND THORACIC DUCT LYMPH.
John H. Grindlay, M.D., James C. Cain, M.D., Jesse L. Bollman, M.D., and *Eunice V. Flock, Ph.D.*, Rochester, Minnesota..... 654

CLINICAL-PATHOLOGICAL CONFERENCE:
Diagnostic Case Study.
E. W. Minty, M.D., O. L. McHaffie, M.D., and *A. H. Wells, M.D.*, Duluth, Minnesota..... 656

CASE REPORT:
Cor Biloculare, Transportation of Great Arteries, Pulmonary Stenosis, Situs Inversus, Et Cetera, in an Adult.
Robert L. Nelson, M.D., and *Arthur H. Wells, M.D.*, Duluth, Minnesota 660

HISTORY OF MEDICINE IN MINNESOTA:
A History of Medicine in Scott and Carver Counties. Biographical Dictionary. *(Continued from May Issue)* 663

PRESIDENT'S LETTER:
National Health Assembly, 1948..... 671

EDITORIAL:
B.A.L. in Heavy Metal Poisoning..... 672
Industry and the Older Age Group..... 672
Radio "Bunk"..... 673

A NEW CANCER EDUCATIONAL SERVICE..... 674

MEDICAL ECONOMICS:
Congress Considering Draft of Physicians..... 675
Medicine Awaits Results of National Health Assembly 676
Mental Hospital Figures Released..... 677
Medical Costs Analyzed..... 677
Minnesota State Board of Medical Examiners.... 678

MINNEAPOLIS SURGICAL SOCIETY:
Meeting of February 5, 1948..... 679
Carcinoma of the Esophagus.
Thomas J. Kinsella, M.D., Minneapolis, Minnesota 679
Report on a Tour of Eastern Surgical Clinics.
Arnold J. Kremen, M.D., Minneapolis, Minnesota 682

MINNESOTA ACADEMY OF MEDICINE:
Meeting of February 12, 1948..... 686
Alexander Ritchie Hall, 1874-1947..... 686
Streptomycin and Tuberculosis.
Moses Barron, M.D., Minneapolis, Minnesota... 686
Military Medicine Needs the Medical Profession.
Ralph Creighton, M.D., Minneapolis, Minnesota. 690

IN MEMORIAM 698

WOMAN'S AUXILIARY 699

REPORTS AND ANNOUNCEMENTS..... 700

OF GENERAL INTEREST..... 702

BOOK REVIEWS 715

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Howard J. Laney, M.D.
511 Medical Arts Building
Minneapolis, Minnesota
Tel. MAin 1357

SUPERINTENDENT
Dorothy M. Most, R.N.
Prescott, Wisconsin
Tel. 69

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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MANAGEMENT OF RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE

BENEDICT F. MASSELL, M.D.
Associate Research Director, House of the Good Samaritan
Boston, Massachusetts

THE phase of the rheumatic fever problem which will be discussed in this paper is a broad one. "Management of rheumatic fever and rheumatic heart disease" involves a consideration not only of the treatment of acute or active rheumatic fever but also the treatment of congestive heart failure associated with active rheumatic fever. Furthermore, because of the repetitive nature of rheumatic fever, any intelligent discussion of management should include a consideration of possible methods for the prevention of rheumatic fever recurrences.

Treatment of Rheumatic Fever

At the outset, it must be stated that unfortunately there is no specific treatment for rheumatic fever. Most of the therapeutic measures therefore aim at (1) building up body resistance and protecting the heart as much as possible from undue strain until the rheumatic process is overcome by natural mechanisms or subsides of its own accord, (2) keeping the patient comfortable and happy, and (3) protecting the patient against episodes which can cause an increase in the activity of the rheumatic process. In this discussion, consideration will be given not only to such procedures as may bring about improvement but also to those which are of no value or which may even cause untoward reactions; for in the treatment of rheumatic fever it is just as important to be cognizant of what may be harmful as it is to know what may be beneficial for the patient.

From the House of the Good Samaritan, Boston, Massachusetts. Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30, 1947.

Bed Rest

Bed rest is probably one of the most important of all therapeutic measures for rheumatic fever. Although available statistics comparing the results of treatment by long bed rest with the results of those in which there was no bed rest are scanty, clinical experience strongly suggests that patients do better with rest. It would appear that rest encourages the building up of body resistance in rheumatic fever patients just as it does in patients with other diseases. Furthermore, when the body is at rest, the heart does not beat as rapidly as it does at other times, and the mechanical strain on the heart is reduced to a minimum. Generally it is advisable to continue bed care until all evidence of active rheumatic fever has disappeared. This means waiting not only until joint pains, fever, nodules, and other clinical signs of the disease have subsided, but also until any abnormality of conduction time in the electrocardiogram has disappeared and until the sedimentation rate has fallen to within normal limits. Because of the frequently cyclic nature of rheumatic fever, it is advisable to have a normal temperature chart and three or four normal sedimentation rate determinations over a period of one to two months before accepting these findings as evidence that the rheumatic process has disappeared.

The total duration of this rest regimen should depend on the duration of active rheumatic fever. Because of the chronicity of the disease and because of the frequency of cardiac involvement in children, it probably is wise to advise a minimum of three months of bed rest for every child

with an established diagnosis of rheumatic fever. In many individuals the rheumatic process continues for as long as six months to a year and in rare cases for several years or longer. In such instances, rest should be maintained for a corresponding length of time.

Two exceptions to these recommendations are occasionally indicated.

1. Adults who develop rheumatic fever for the first time and who show no evidence of heart involvement are not likely to develop heart damage at a later date. With such individuals, therefore, it is safe to be more lenient and allow gradually increasing physical activity when the clinical signs of disease have subsided even though abnormal laboratory findings may still be present.

2. In some children and young adults the sedimentation rate gradually falls in conjunction with clinical improvement but levels off above the accepted upper limit of normal and continues at this abnormal level month after month even though the patient is otherwise entirely well. In some instances these apparently abnormal sedimentation rates eventually come down to within normal limits. In other instances they may continue for as long as three or four years or even longer. Although such persistently elevated sedimentation rates, even in the absence of other evidence of active rheumatic fever, may indicate a low-grade rheumatic process, nevertheless it usually is not practical to continue the bed rest regimen for a correspondingly long period. Therefore, when the sedimentation rate persists at an abnormal level and shows no further trend in a downward direction, it is reasonably safe to allow gradually increasing physical activity, provided that there has been a total of at least six months in bed and at least three or four months of freedom from clinical signs of active rheumatic fever, and provided that there has been no progression of the cardiac damage during this period.

When the time has arrived to allow the patient out of bed, it is wise to make the transition from bed rest to physical activity a gradual one. This gradual method of increasing time up allows the patient to adjust himself better to physical activity and allows for the detection of any untoward reactions to physical activity before harmful effects can be incurred.

Diet, Vitamins, and Iron

Although no definite relationship has been established between diet and the onset of rheumatic fever, proper diet does appear to contribute towards improvement in some patients. Additional vitamins and iron or iron-and-liver preparations are of questionable value but can do no harm. Usually the anemia which is often associated with rheumatic fever will not improve until the active rheumatic process subsides.

Salicylates

Although salicylates have been used for many years as a remedy for rheumatic fever, there is still disagreement among physicians as to their exact virtues. All agree that salicylates are of great value for symptomatic relief. The drug reduces fever promptly, so that within a few days of starting therapy the temperature can be brought down and maintained within normal limits. In addition to this antipyretic effect, salicylates have a striking effect on the joint manifestations. As a rule, pain and tenderness quickly disappear, and even joint swelling subsides relatively soon.* Salicylates may also relieve other pains, such as those in the precordium, chest, back, and abdomen. Finally, there is suggestive evidence that the drug may occasionally reduce the amount of effusion associated with pericarditis. Salicylates in small or moderate dosage, sufficient to reduce fever and relieve pain, may also reduce an elevated leukocyte count but do not appreciably lower the erythrocyte sedimentation rate.

Over a period of years, physicians had come to believe that, although salicylates by these effects could make rheumatic fever patients feel much more comfortable, their use did not actually shorten the course of the disease nor reduce or prevent heart damage. However, in 1943, Dr. Alvin Coburn suggested that the customary doses of salicylates, although productive of symptomatic relief, were too small. He observed that, where the drug was given in massive doses and where therapy was started soon after the onset of the disease, the duration of the rheumatic process could be shortened considerably and heart damage could be prevented. When given in this way, the drug was found to reduce the erythrocyte sedimentation rate as well as the temperature to within normal limits.

*Murphy would probably disagree with this statement. He failed to observe any appreciable effect of salicylates on joint swelling.

To obtain this remarkable effect, Dr. Coburn considered it necessary to give sufficient salicylate to produce a blood concentration above 35 mg. per 100 c.c. He also advised that the drug be administered intravenously during the first few days of therapy in order that the high salicylate blood level be obtained promptly. Others likewise reported favorable results with massive oral salicylate therapy, but unfortunately most investigators have not been able to equal Dr. Coburn's good results. They have not found very large doses more beneficial than the dosage necessary for symptomatic relief. Even with blood levels above 35 mg. per 100 c.c., the duration of the rheumatic process has not been observed to be shortened, nor has the incidence or degree of heart damage been reduced. Although in some instances the sedimentation rate has been brought to within normal limits by high blood concentrations of salicylate, when the drug therapy was discontinued the rate soon returned to the same level that it would have been had salicylates not been given. Furthermore, it now appears that the effect of salicylates on the sedimentation rate is nonspecific and that it may be the result of a toxic action on the liver. Some investigators have occasionally observed such severe toxic reactions from massive therapy that they feel the procedure is a dangerous one.

It appears, therefore, that the virtues of salicylate therapy are still not clearly defined. The drug in moderate doses is certainly of value for symptomatic relief. The answer to the question of whether very large doses given early in the course of the disease will or will not actually produce permanent beneficial results must await further investigation. Therefore, until the question is definitely answered, it would seem advisable to give salicylates in sufficient dosage only to produce relief of pain and to reduce high fever. The drug, in moderate doses, probably should also be given to rheumatic fever patients with pericarditis.

It is important to point out that salicylates, by relieving joint pains and abolishing fever, may mask two very important manifestations of rheumatic fever and thus may produce a false sense of security both for the patient and for the physician. Because of this camouflaging effect, salicylates should not be given to patients who do not require symptomatic relief or who do not have pericarditis. Furthermore, even when use of the drug is indicated, the therapy should not be continued month after month without occasionally discontinuing the treatment so that the presence or absence of pain and fever may be determined.

Finally, it is evident that as long as the patient is receiving salicylates, the absence of pain and fever is not necessarily an indication of the subsidence of the rheumatic process. In fact, because of the possible cyclic course of rheumatic fever, at least three or four weeks of freedom from pain and fever should elapse after the omission of salicylates before accepting the fact that these manifestations have completely disappeared.

In connection with the omission of salicylate therapy it is well to call attention to an occasionally observed phenomenon which may be described as a withdrawal effect. The abrupt discontinuance of the drug after a period of several weeks or more of treatment may be followed by the appearance of fever which subsides again spontaneously within three or four days and does not recur. This transient fever may be very difficult to interpret. It usually can be avoided by reducing the dose of salicylates gradually over a period of one or two weeks before finally omitting it altogether.

Methods of Administration.—Salicylates may be given by mouth, by rectum, or by the parenteral route. The intravenous injection of sodium salicylate is usually unnecessary, for even the high blood levels advocated by Dr. Coburn can be readily and quickly obtained when the drug is given by mouth. Although absorption of salicylates from the rectum is said to be poor, clinical experience suggests that it is sufficiently good to produce relief of pain in many instances, and hence this route may be utilized in patients who are vomiting. When sodium salicylate is given in this way, rectal irritation can be prevented to some extent by dissolving the drug in cornstarch solution.

For administration by mouth, a route suitable for most patients, either sodium salicylate or aspirin may be used. In my experience the latter is less likely to cause gastric irritations and, therefore, is the preparation of choice. Any salicylate preparation when given in large doses may produce vomiting by a central action, irrespective of the route of administration.

Dosage.—Whether salicylates are given as sodium salicylate or as aspirin, the dosage is approxi-

mately the same. For the relief of symptoms it usually is necessary to give between 0.030 and 0.045 gram (½ and ¾ grain) per pound of body weight every twenty-four hours. Thus a 50-pound child might require between 1.5 and 2.5 grams (25 and 40 grains) per day, and a 150-pound adult might require between 4.5 and 7.0 grams (75 and 110 grains). Some individuals may actually require less than this dose; whereas others, especially adults with severely swollen and tender joints, may require a somewhat larger dose for relief. In general, it is better to start with the average requirement and then, if necessary, increase or decrease the dose according to the clinical response of the patient. For the relief of symptoms it usually is not necessary to administer salicylates during the night. A simple routine is to divide the total daily amount into four to six doses and to give one dose every three or four hours while the patient is awake.

Toxic Effects of Salicylates

Allergic Reactions.—There are occasional individuals who are hypersensitive to aspirin. Apparently idiosyncrasy to this derivative is more common than to other salicylate compounds. Even small doses of the drug may be followed by allergic-like reactions, such as swelling of the nasal mucosa, puffiness of the eyes, and even asthma. Deaths after the ingestion of small quantities of acetylsalicylic acid, though fortunately rare, have been reported. These hypersensitivity reactions can usually be avoided by taking an adequate history and by not giving the drug to persons who report previous reactions. In rare instances when a patient has never previously taken aspirin or other salicylate preparations, and in those instances when a suspicious but inconclusive history of aspirin idiosyncracy has been elicited it is safe to administer a test dose of 0.3 grams (5 grains), and if there is no untoward reaction after several hours, the amount may be gradually increased to that which is desired.

Epigastric Distress, Nausea, and Vomiting.—Clinical experience suggests that these symptoms are usually due to direct gastric irritation, though a recent study would seem to indicate that the action may be entirely central. Although large amounts of salicylate are usually required to produce vomiting, occasional individuals are susceptible even to small doses. As a rule, aspirin is better tolerated by the stomach than sodium salicylate. To prevent gastric symptoms it is customary to give sodium bicarbonate in equal dosage, but in patients with severe heart damage it is better to avoid the administration of sodium because of the danger of causing fluid retention. Therefore, under the latter circumstances, the use of enteric-coated preparations is preferable when gastric irritation is a problem.

Tinnitus.—Even when salicylates are being given in only moderate dosage for the relief of symptoms, some patients will complain of ringing in the ears. This annoying reaction will often decrease and sometimes disappear after several days even though the medication is continued. If, however, the ear symptoms continue, and if they are very bothersome to the patient, it may be necessary to omit the drug entirely for twenty-four hours and then resume it in smaller amounts. Often a reduced dosage can be found which will not produce tinnitus and at the same time will be sufficient to control pain and fever.

When large doses of salicylates are given, tinnitus occurs more frequently and in a more severe degree. In addition to ringing in the ears, actual deafness may be produced. When this happens, it is well to omit therapy entirely for one or two days and then resume it with smaller doses. However, if large amounts of salicylate are necessary for the control of severe symptoms, it is comforting to know that permanent salicylate deafness has not been reported.

Hypoprothrombinemia.—Salicylates have been shown to cause a reduction of plasma prothrombin. Furthermore, post-mortem examinations of persons dying of salicylate intoxication have occasionally revealed the presence of capillary hemorrhages in the brain and in other organs. In spite of these observations there is generally no need for concern when salicylates are administered in small or moderate doses, for actual bleeding as the result of therapy is rarely, if ever, encountered, the prothrombin-depressing effect is sometimes only temporary even though treatment is continued, the lowering of prothrombin does not occur in all patients receiving the drug, and reduction of prothrombin to a critical level has not been observed except in association with extremely high plasma salicylate concentrations.

Rheumatic fever patients who happen to be receiving salicylates occasionally may also be sub-

ject to nose bleeds and rarely may have petechial skin hemorrhages or other signs of bleeding. Under these circumstances, even though there may be no actual proof of a causal relationship between the bleeding and the therapy, it probably is advisable as a precautionary measure to administer vitamin K. In spite of one opinion to the contrary, most reports suggest that the prothrombin-depressing effect of salicylate can be corrected and prevented by this vitamin. About 1 milligram of synthetic vitamin K is said to be needed for each gram (15 grains) of salicylate. Commercial preparations of aspirin which have vitamin K incorporated in the tablet are available.

Hyperpnea and Alkali Reserve Depletion—Hyperventilation is an important sign of serious salicylate intoxication and is an indication for the immediate omission of therapy. It must be distinguished from cardiac dyspnea. In hyperpnea the patient takes deep and rapid breaths and yet does not have any subjective symptoms of air hunger. Usually the patient can lie flat, and cyanosis is absent. The urine may or may not contain acetone.

Although the mechanism of salicylate hyperpnea is not entirely understood, it appears to involve a direct or reflex stimulating effect of the salicylate molecule on the respiratory center. With overventilation, carbon dioxide is blown off, and there is a compensatory excretion of alkaline urine. The net result is a reduction of the blood bicarbonate and often a rise in the pH. Apparently in occasional cases ketosis develops secondarily (as evidenced by the presence of acetone in the urine), and this in turn produces further depletion of the alkali reserve.

Fortunately, hyperpnea and serious depletion of the alkali reserve is usually encountered only when very large doses of salicylate are being administered. However, it occasionally occurs when the drug is being given in only moderate amounts for the control of symptoms, so that one should always be alert to its possible development. Children seem to be somewhat more susceptible than adults to this untoward reaction.

Whenever hyperpnea occurs, salicylate therapy should be discontinued immediately and continuously until all signs of the reaction have disappeared. Then, if salicylates are still necessary, they should be resumed in smaller dosage. Although the administration of sodium bicarbonate will increase the blood bicarbonate concentration, it may also raise an already elevated pH to a dangerous level. Furthermore, the administration of sodium to patients who have severe heart damage may precipitate congestive failure by increasing the retention of fluids. For these reasons it probably is safer not to treat salicylate hyperpnea with sodium bicarbonate or other alkalis. The simple administration of sweet drinks by mouth, in addition to the omission of salicylates, is sufficient therapy in most instances.

Sulfonamides and Penicillin

Sulfonamides do not favorably affect the course of established active rheumatic fever; on the contrary, these drugs often seem to increase the activity of the rheumatic process or cause toxic reactions. Hence, the administration of sulfonamides is contraindicated in the presence of active rheumatic fever.

Penicillin likewise has no beneficial effect upon the course of rheumatic fever, and, therefore, it also is of no value as a therapeutic agent. Although some investigators believe that penicillin may aggravate active rheumatic fever, it has been my experience that most patients can tolerate the antibiotic, especially if it is given for periods of only a week to ten days. Because of its apparent harmlessness, penicillin, in contrast to sulfonamides, can be given to patients who have active rheumatic fever and who also have or are suspected of having some other condition for which the antibiotic is known to be therapeutically effective.

The ineffectiveness of sulfonamides and penicillin for the treatment of active rheumatic fever should not be confused with the possible virtues which these drugs may have for the prevention of rheumatic fever recurrences. Furthermore, there is suggestive evidence that, in patients with active rheumatic fever, flare-ups of the disease may be prevented, and the course of the illness may be favorably influenced by the early use of penicillin therapy for all intercurrent hemolytic streptococcal respiratory infections. This aspect of the problem will be discussed more fully when possible methods for the prevention of rheumatic fever are described.

Home School and Occupational Therapy

Rheumatic fever is a subacute or chronic disease. Recovery from the acute attack and con-

valescence usually take many months, during which time the patient cannot of course attend school. Rheumatic fever is also a repetitive disease, and, hence, further loss of time from school is caused by recurrences. Because of these prolonged absences, the rheumatic child is sometimes obliged to repeat grades and to attend classes with children considerably younger than himself. A frequent result of this unfortunate situation is that the child loses interest in continuing his education and develops a feeling of inferiority.

A very important part of the treatment of rheumatic fever, therefore, is the provision for such home instruction as will keep the patient abreast of his school studies. In many cities the school system provides home teachers who will visit the child two or three times a week. Except during the more acute stages of the disease, most patients are not too ill to study in bed, and with adequate instruction many make such excellent progress that they are able after recovery to return to the grade of school to which they would normally have been promoted had their attendance not been interrupted by illness.

Patients who do not feel very ill find the long months of bed rest extremely monotonous. Although home schooling somewhat relieves the monotony, recreational activities contribute the most toward keeping the child happy. In this field the occupational therapist usually proves invaluable. However, many arts and crafts can be taught to a child by his parents if a professional instructor is not available.

Treatment of the Heart: Congestive Failure

Most patients with active rheumatic fever do not require treatment directed towards the heart itself. Although it is true that bed rest may benefit the heart by reducing the amount of its work and its speed, even rest is chiefly of value because it stimulates the body's natural resistance to the rheumatic process. The heart itself requires treatment only if there is congestive failure, pericardial effusion with tamponade, or disturbances of rhythm such as auricular fibrillation. Tamponade resulting from rheumatic pericarditis fortunately is rarely encountered, and the treatment of disturbances of rhythm is essentially the same as when these conditions occur in association with other kinds of heart disease. Hence the limited time which is available will be devoted to the problem of congestive failure associated with active rheumatic fever.

Bed Rest

Bed rest, an obvious part of the treatment of congestive heart failure, has already been discussed under the treatment of active rheumatic fever. In the presence of congestive failure, the rest regimen should be as strict as possible. The patient should be allowed to lie flat or to sit up against a back support, whichever gives more comfort.

Salt Restriction

In the presence of congestive failure, restriction of sodium tends to increase the urinary output, while the ingestion of sodium increases the retention of fluids. A maximum diuretic effect is obtained with a so-called "salt-free" diet in which the daily amount of ingested sodium chloride is restricted to 2 grams (30 grains). In order to obtain this minimum intake, it is not only necessary to refrain from the addition of salt at the table and in cooking but also to select foods which are very low in salt content.

Food which is so nearly salt free tastes extremely flat. Powdered ammonium chloride shaken on sparingly from a pepper shaker may contribute a slightly salty taste, but too much of this causes a bitter taste. Spices and salt-free condiments may also improve the taste of the food slightly. Even with the use of these salt substitutes, the diet will still not be very palatable, and many patients will not eat or will eat very poorly. Since an adequate food intake is an important part of the treatment of the active rheumatic process, a diet which is too restricted in salt may defeat its own purpose. Therefore, for patients who will not eat a "salt-free" diet, it is advisable to be more lenient and to prepare for these individuals a diet which is relatively low in salt content but which is still palatable.

Fluid Restriction

It is still customary with many physicians to restrict the fluid intake of cardiac patients who are in congestive failure. However, if the salt content of the diet is sufficiently low, fluid restriction is not necessary, since without sodium, excess amounts of fluid will not be readily retained in the body. Furthermore, patients who are suffering from an active inflammatory process such as rheumatic fever become dehydrated if their fluid intake is too strictly curtailed. It is, therefore, generally advisable to allow rheumatic fever patients to drink as much as they wish,

especially if their salt intake is low. Most patients who do not ingest much salt will not desire excess amounts of fluid.

Theobromine Diuretics

These substances, which belong to the xanthine group of drugs, provide us with one of our most effective weapons for combating congestive failure when it occurs in the course of active rheumatic fever. There are several different theobromine preparations which are available for oral use. Most of them are obtainable in 0.5 gram (7½ grain) tablets, and the daily dose varies from 1.5 grams (22½ grains) to 4 grams (60 grains), depending on the size of the patient and the diuretic response. The drug is most effective when given in three or four divided doses per day and when administered daily until the need for it is no longer present. Many patients have been given theobromine diuretics every day for three or four months or longer without any untoward reaction and without any loss of the drug's diuretic activity. The percentage of rheumatic fever patients whose congestive failure can be kept under control by this diuretic is extremely high, especially if the drug is used in conjunction with a salt-restricted diet.

Of the available theobromine diuretics which I have tried, theobromine calcium salicylate (Theocalcin) is the most satisfactory. It is essentially nontoxic, and it is extremely well tolerated by the gastrointestinal tract, practically never causing nausea or vomiting even when given in as large doses as 1 gram (15 grains) three times daily to small children. The disadvantage of Theocalcin is its relatively high cost. One should also keep in mind that this drug contains about 35 per cent salicylate, and that 1 gram (15 grains) is equivalent in salicylate effect to 0.5 gram (7½ grains) of aspirin.

Another well-tolerated preparation is theobromine sodium acetate, which is made up in a specially enteric-coated tablet and sold under the trade name of Theosodate. Like Theocalcin, it does not cause nausea or vomiting and often produces a good diuretic response. However, it has the disadvantage of containing sodium, which should be avoided for patients who already have a tendency toward fluid retention.

Plain theobromine is relatively cheap and is an effective diuretic, but it frequently causes gastric irritation with consequent nausea and vomiting.

Theobromine sodium salicylate (Diuretin) is another relatively cheap and often effective diuretic, but it also is poorly tolerated by the gastrointestinal tract and, in addition, has the disadvantage of containing sodium. Its chief value is in the treatment of patients for whom a theobromine diuretic is desired but who, because of vomiting, cannot be given medication by mouth. To these patients theobromine sodium salicylate, which is water soluble, can be given by rectum in small retention enemata.

Ammonium Chloride

Ammonium chloride by itself has a mild diuretic action, but its chief use is in conjunction with the administration of mercurial diuretics, the action of which it seems to enhance. To be effective it must produce an acid urine. Ammonium chloride is obtainable in enteric-coated tablets of 0.5 grams (7½ grains), and the effective dose is usually one or two tablets three or four times a day (total of 1.5 to 4.0 grams daily) depending on the size of the patient. The drug can be given in these doses for long periods without producing any toxic reaction, but, when larger doses are used, one should watch for the development of acidosis. If enteric-coated preparations are given, nausea and vomiting can usually be avoided. To be sure that the dose is effective, the pH of the urine should be checked occasionally with nitrazine paper.

Mercurial Diuretics

These substances are organic compounds of mercury. Some of the better known preparations for intravenous and intramuscular injection are mercuzanthin, mercuhydrin, and salyrgan with theophyllin. These are obtainable in 1 c.c. and 2 c.c. glass ampules. For rectal administration, mercuzan and salyrgan with theophyllin are available as suppositories. Preparations of mercurial diuretics for oral administration have also been introduced recently, but they are not so satisfactory as the other forms since their absorption is uncertain and their administration not infrequently causes nausea, cramps, and diarrhea.

It is customary among physicians to give the mercurials in 1 c.c. or 2 c.c. doses at intervals of once or twice weekly. Even in adults such amounts of these potent diuretics, as a rule, cause a marked increase in urinary output for a period of about twenty-four hours, after which for several days there is a compensatory drop in the

urinary volume to a level somewhat below the usual average. This method of administration, therefore, has the disadvantage of causing considerable fluctuation in kidney excretion. Furthermore, the sharp rise in fluid loss may cause dehydration, chloride depletion, and consequent debility of a high degree.

A somewhat more satisfactory way of administering the mercurial diuretics, a way which has been emphasized only in the past few years, is to give the smallest amount which will produce a rise in urinary output above that of the fluid intake, and to repeat the dose at frequent intervals. In adults it may be possible to obtain a suitable diuresis with as little as 0.25 to 0.5 c.c., and in children 0.10 to 0.25 c.c. may suffice. If an adequate effect can be obtained with such small amounts of the mercurials, it is safe to inject the substance as often as every day or every other day and in this way avoid the marked fluctuations which are produced with the less frequent administration of large doses. Unfortunately, however, it is very difficult in most patients to obtain an absolutely constant and continuous diuresis even by the frequent small dose method.

The intramuscular route for the administration of mercurials is generally preferable since it is less likely to cause serious reactions than the intravenous route and usually causes a satisfactory diuretic response. The rectal route is often suitable for patients who are at home and who do not have the services of a physician or a nurse available at the time the drug is needed. Sometimes prolonged use of suppositories causes considerable rectal irritation so that the suppository can no longer be retained. When rectal suppositories are used for children, sufficiently small doses can be obtained by dividing the suppository longitudinally. The mercurial diuretics must never be given subcutaneously, for even a small amount under the skin may cause marked irritation and severe pain.

As has been already mentioned, the response to the mercurial diuretics may be greater and the minimal effective dose may be smaller if the patient's urine is kept acid by the oral administration of ammonium chloride. The latter may be given for a few days at a time, starting the day before the mercurial is administered, or it may be given as a daily ration for long periods, the mercurial preparation being given intermittently.

Comparison of Mercurial and Theobromine Diuretics

With rheumatic fever patients, mercurials are effective in a somewhat higher percentage and produce a much greater amount of diuresis than the theobromine substances. However, the mercurials, even when given in small amounts at frequent intervals, tend to have an intermittent action, whereas the theobromine drugs cause a more continuous diuresis. The theobromine diuretics also have the advantage of being effective when given by mouth. Because of these differences, the theobromine substances are not likely to be so upsetting to the patient.

In general, for patients in whom the production of diuresis is not of the utmost urgency, it is advisable to give the theobromine diuretics a trial and to continue them as long as they are effective. If the amount of fluid retention is great, and if time is important, or if theobromine diuretics have been tried without success, then it is advisable to use the mercurials. Often, if diuresis can be started by the use of the mercurials, a satisfactory fluid balance can be maintained by shifting to one of the theobromine preparations even though the latter originally had failed to be effective.

Digitalis

When auricular fibrillation is associated with congestive heart failure, digitalis is the drug of choice, and its use may produce dramatic results. The drug may also be of value in the treatment of certain other disturbances of rhythm.

However, when the cardiac rhythm is regular, digitalis usually produces a slight effect or none at all on the heart rate and on congestive failure which is associated with active rheumatic fever. In only occasional instances is the diuretic response great after digitalization. Furthermore, unless considerable caution is used, digitalis may sometimes have serious toxic effects on the heart. For these reasons digitalis is of secondary importance, and diuretics together with salt restriction should be resorted to first in the treatment of congestive failure. Only if the latter regimen fails to produce a satisfactory response should the patient be digitalized, and digitalization must be done cautiously.

Time does not allow for a detailed discussion of methods of administering digitalis, but they are essentially the same as those used when the drug is administered for the treatment of various

kinds of adult heart disease. Either whole leaf preparations or the more recently introduced pure glycosides may be employed. The dose used for children should be calculated on the basis of weight. Because patients with active rheumatic fever seem to be particularly susceptible to the toxic effects of digitalis on the myocardium, the drug should never be "pushed."

After-Care of Rheumatic Heart Disease

In discussing the treatment of rheumatic fever, it was pointed out that once the rheumatic process had completely subsided, gradually increasing physical activity should be allowed. Emphasis was put on the word gradually. Even after the patient is up all day, the continuation of a daily rest period of one to two hours is advisable for another year or longer. Out-of-door walks in good weather and mild forms of exertion favor improvement in muscle tone and should be encouraged. However, during the first year after recovery from an attack of rheumatic fever, the patient should avoid all forms of vigorous physical activity.

A regimen of gradually increasing activity is designed to keep the patient constantly in a well-rested condition and is based on the premise that fatigue induces the lowering of body resistance and hence contributes to the development of respiratory infections and flare-ups of the rheumatic process. The restrictions placed on the patient's activities are not aimed directly at the heart itself, and they are necessary even if the patient has escaped cardiac involvement.

After this first year of restricted physical activity has elapsed, what and how much should the patient be allowed to do? The answer to this question is extremely important. All too often the problem is so handled that many individuals who should be leading normal lives are reduced to a state of chronic invalidism. The physical activity allowed for persons with rheumatic heart disease should depend upon the degree of cardiac damage. The best measures of the latter are the size of the heart and the individual's actual tolerance for physical activity. Heart size is usually a much more accurate indication of the degree of cardiac involvement than are heart murmurs. As a rule, the bigger the heart, the greater is the damage. Tolerance for physical activity is best measured by what the patient finds he can do without becoming short of breath.

Individuals whose hearts are either normal in size or only slightly enlarged, and whose ability to perform exercise without developing shortness of breath is not below normal, should be restricted very little if at all. They should be allowed to take part in various sports such as swimming, golf, tennis, baseball, and even football. Perhaps extremely arduous activities such as long distance running are best avoided. I have known of some excellent performers in various fields of sport who have had mild rheumatic heart disease and whose participation in these sports apparently did not aggravate their cardiac condition. One young man whom I have particularly in mind had slight but definite aortic regurgitation. Nevertheless he was not only captain of a well-known college football team but was even named as a back on the "All-American" team.

When the heart is more than slightly enlarged, and when tolerance for physical exertion is reduced, the patient's physical activities must be limited. Even in these circumstances some mild forms of exercise are permissible. For such individuals the best rule is that as soon as slight dyspnea appears and before extreme fatigue develops, the causative activity should be stopped.

The foregoing discussion is based on the premise that physical exertion within the limits of exercise tolerance does not cause any undue myocardial strain or any increase in valvular damage of the rheumatic heart. Progression in rheumatic heart disease is nearly always due to recurrences of rheumatic fever. In other words, it is the active rheumatic process rather than physical strain which usually makes the heart grow worse. *Therefore the most important aspect of the after-care of patients with rheumatic heart disease, and as a matter of fact for all individuals who have once had rheumatic fever whether or not they have cardiac involvement, is the prevention of rheumatic fever recurrences.* The after-care should also include some attention to the prevention of subacute bacterial endocarditis, a not uncommon and an important complication of rheumatic heart disease.

Prevention of Rheumatic Fever

The prevention of rheumatic fever recurrences constitutes one of the most important aspects of the entire rheumatic fever problem and is fortunately a phase of the problem in which real progress has been made during recent years. As has

already been pointed out in previous discussions, rheumatic fever is a repetitive disease. It tends to return again and again, and with the recurrence more and more heart damage may be produced.

The methods of prevention are chiefly measures aimed at the prevention of hemolytic streptococcal respiratory infections, which are responsible for practically all recurrences of rheumatic fever, and, since streptococcal and nonstreptococcal infections are not always readily differentiated, measures aimed at the prevention of all respiratory infections.

General Measures

Respiratory infections are extremely contagious. Therefore, the rheumatic individual should avoid, as far as possible, exposure to people who have colds and should also avoid chilling and exposure to cold wet weather.

The spread of respiratory infections is especially favored by the herding together of individuals. Since the danger of rheumatic recurrences is particularly great during the first six months to a year after recovery from the disease, it is probably advisable during this period that the rheumatic child does not return to regular school nor attend church, the movies, or other crowded places. While home instruction is being given, the school teacher, social worker, and friends must be warned not to visit the home if they have any likely symptoms of a cold. When the patient finally returns to regular school, the co-operation of the school teacher should be requested in an attempt to prevent the child from sitting next to others who have respiratory infections.

The rheumatic child should sleep by himself in his own room, for sleeping with others is conducive to the contraction of colds.

"Body resistance" should be kept at its optimum by providing a well-balanced diet, plenty of sleep, and an extra rest period during the day.

Sulfonamides

It has been pointed out previously that the sulfonamide drugs not only are of no value in the treatment of rheumatic fever but that they may actually aggravate the active rheumatic process. Furthermore, even if streptococcal respiratory infections are treated with sulfonamides as soon as they are detected, there is no evidence that the therapy will decrease the incidence of rheumatic recrudescences. However, information has accumulated which suggests that the daily administration of small amounts of sulfonamide drugs to patients who have fully recovered from an attack of rheumatic fever will protect these individuals in large measure against the development of hemolytic streptococcal respiratory infections and hence prevent further attacks of rheumatic fever. Rosenberg and Hench gathered together the data of seventeen reports in the medical literature between 1939 and 1945 and found that among persons receiving sulfonamides the rheumatic fever attack rate was 2.2 per cent (twenty-two definite recurrences in 1,037 person-seasons), whereas the attack rate among untreated controls was 13.7 per cent (183 definite recurrences among 1,340 person-seasons).

When used for this prophylactic purpose, the sulfonamide preparation can be given in small amounts, but the drug must be given every day. Protection is afforded only so long as there is sulfonamide in the blood. The drug is not effective, of course, against sulfonamide-fast strains, but fortunately these are not common. Protection against sulfonamide-susceptible strains is not absolute either, and recrudescences of rheumatic fever have occurred in individuals taking the drug. However, the hazard of hemolytic streptococcal infection and the resultant chances of further rheumatic fever are greatly reduced.

Preparations and Dosage.—Although sulfanilamide and sulfathiazole were used in most of the published studies on rheumatic fever prophylaxis, the more recently introduced and apparently less toxic drugs, sulfadiazine and sulfamerazine, would seem to be preferable. But, with present knowledge, it is still difficult to determine which of these last two preparations is the more suited to the rheumatic fever prevention problem. Each has certain advantages and disadvantages.

The factors influencing the choice of a sulfonamide preparation are the antibacterial activity of the free drug, the height and constancy of the blood level obtained with small infrequent doses, the proportion of the drug which remains unconjugated (nonacetylated), and the amount of the drug which remains unbound to plasma proteins.† Sulfamerazine has the advantage of giving a higher and more constant blood concentration

†Observations by Bernard Davis on the affinity of plasma proteins, particularly albumin, for a wide variety of substances may have an important bearing not only on the problem of chemotherapy but also on many other problems in pharmacology, bacteriology, immunology, and physiology.

of the free (nonacetylated) drug with a given dosage. Hence, the desired level can be attained with smaller amounts and less frequent administrations. On the other hand, sulfadiazine does not become as readily bound to plasma proteins as does sulfamerazine. Reports in the medical literature suggest that at an approximate concentration of 10 mg. of the unconjugated drug per 100 c.c. of plasma, between 60 and 80 per cent of sulfamerazine is bound, while only 30 to 50 per cent of sulfadiazine is bound. Furthermore it appears that protein-bound sulfonamides are lacking in antibacterial activity. This difference would seem to indicate a definite advantage in the use of sulfadiazine. Unfortunately, available information comparing the concentrations of total effective drug (nonacetylated and unbound) in the blood of patients at various time intervals after small doses of these two sulfonamides is lacking, and hence a final decision cannot be made as to which of the two is likely to be most effective for prophylactic purposes.

In spite of a lack of exact information, certain approximations can be made. A careful study by Phair, Schoenbach, and Merrell shows that at various time intervals following single 1-gram and 2-gram doses, the concentrations of nonacetylated drug in the blood, on the average, are twice as high for sulfamerazine as for sulfadiazine. On the other hand, the various studies concerned with the binding of sulfonamides by plasma proteins suggest that for a given concentration of the total nonacetylated drug, the percentage of unbound drug, on the average, is twice as high for sulfadiazine as for sulfamerazine. Hence, it may be concluded that following a given dose the concentration of effective drug (nonacetylated and unbound) at any particular time interval is about the same for sulfadiazine and sulfamerazine.

For prophylactic purposes, the total daily dose of either of these preparations should probably be between 0.5 gram (7½ grains) and 1.0 gram (15 grains), depending upon the size of the patient. The total daily amount can be divided into two doses, one before breakfast and one at bedtime. The blood levels, which probably should be between 1 and 4 mg. per 100 c.c. for sulfadiazine and between 2 and 8 mg. per 100 c.c. for sulfamerazine, can be checked occasionally, and if necessary the dose can be adjusted to obtain the desired level.

Toxic Reactions and Precautionary Measures.—The great majority of individuals can take daily small rations of sulfamerazine or sulfadiazine without difficulty. Nevertheless, the sulfonamide drugs are potentially toxic substances, even when given in small doses, and may cause renal irritation, agranulocytosis, anemia, rash, and fever. Sometimes the toxic effects can be quite serious, especially if they are not recognized and are allowed to continue. Indeed, the danger of toxic reactions is sufficiently great so that sulfonamides should never be administered over a period of a week or longer to any patient unless both the physician and the patient are prepared to have both clinical examinations and appropriate laboratory tests at adequate intervals.

The longer an individual takes sulfonamides without difficulty, the less are the chances of his subsequently developing an untoward reaction. Examinations and tests, therefore, must be made more frequently at first and less frequently as time goes on. However, since even very late toxic reactions have sometimes occurred, the check-up observations should never be dispensed with altogether. An apparently satisfactory routine is as follows: Check-ups are made twice weekly for the first two weeks, once weekly for the next two weeks, and then every two weeks until a total of three months has elapsed. The examinations may then be spaced at four to six week intervals until the end of the first year. Thereafter, as long as the sulfonamide regimen is continued, the patient should be seen every two or three months.

At each visit a urine should be tested for albumin and its sediment examined under the microscope for the presence of red blood cells, and blood should be taken for a hemoglobin determination and a leukocyte count. A differential count is necessary only if the total white blood cell count is under 5,000.

The appearance of any definite toxic manifestation is, of course, an indication for the immediate discontinuance of sufonamide drugs.

Indications for and Duration of Prophylactic Sulfonamides.—The danger of recurrent rheumatic fever is so great that all children who have recovered from definite or probable rheumatic fever, irrespective of whether heart damage has been sustained, should be protected with daily small doses of sulfonamides—provided that ade-

quate check-up examinations and tests can be made and provided that no toxic reactions develop. Because of the frequent visits to the physician's office and the frequent blood tests necessitated by the prophylactic regimen and because of the risk of toxic reactions, sulfonamides should not be used unless the diagnosis of rheumatic fever has been reasonably certain.

Although the risk of recurrent rheumatic fever exists at all times, in civilian life it probably is considerably reduced after adulthood is reached. That there is a greater risk during childhood may be partly explained by the fact that exposure to hemolytic streptococcal infections is greatest during the period when children are herded together in schoolrooms. Therefore it is advisable that the prophylactic sulfonamide regimen be continued until the age of twenty years or at least until the completion of school.

Although hemolytic streptococcal infections decrease in frequency during the summer months, they do not disappear completely during this period. It is probably advisable, therefore, to administer sulfonamides throughout the year rather than to discontinue the drug during the summer months. Moreover, the temporary omission of therapy does not decrease the risk of toxic reactions nor does it appreciably reduce the number of necessary check-up examinations.

Penicillin

Penicillin, like the sulfonamides, has no therapeutic virtues once active rheumatic fever has begun. However, preliminary observations suggest that this antibiotic may have some application to the prevention of rheumatic fever recurrences. For purposes of prevention, penicillin might be used in two ways. The first is its use in therapeutic doses for the treatment of hemolytic streptococcal respiratory infections. The second application is for the prevention of streptococcal infections by the daily administration of an oral preparation of the drug.

Treatment of Hemolytic Streptococcal Infections.—The use of penicillin in this connection is still experimental. Nevertheless there is reason to believe that the prompt treatment of hemolytic streptococcal respiratory infections with penicillin in adequate doses may considerably reduce the chances of subsequent rheumatic fever recurrences, which normally occur in about 50 per cent of instances. The observations on which this statement is based are as follows:

1. Penicillin, *in vitro,* has a marked bactericidal action on most strains of hemolytic streptococci.

2. Throat cultures of patients ill with hemolytic streptococcal infections become "negative" very quickly after adequate penicillin treatment is started, and if the treatment is continued for ten days, the throats of most patients can be permanently cleared of hemolytic streptococci. This finding is in contrast to the effect of sulfonamides which as a rule take longer to produce "negative" cultures and which usually do not permanently clear the throat of streptococci.

3. If hemolytic streptococcal respiratory infections are treated with penicillin within twenty-four hours of onset, the causative organisms are killed so quickly that streptococcal antibodies (such as the antistreptolysin titer) sometimes fail to develop in the serum. Such results are not generally obtained when sulfonamides are used as the therapeutic agent.

When penicillin is used in an attempt to prevent rheumatic fever recurrences, treatment should be started as soon as possible and should be used for all respiratory infections with which there is a red sore throat or definite fever. Whenever possible a throat culture should be taken just prior to starting therapy, but the initiation of the treatment should not be postponed until the results of the culture are known. If after one or two days the culture is reported as "negative," the penicillin therapy can be discontinued; but if the culture is found to be "positive" for hemolytic streptococci, the treatment should be continued for a total of ten days even though apparent clinical recovery may occur much sooner than this. For adequate penicillin therapy, either 25,000 units of the antibiotic should be given in saline or distilled water intramuscularly every three hours day and night, or 300,000 units of calcium penicillin in beeswax and oil should be administered intramuscularly once daily, or 200,000 units should be administered by mouth five times daily. As soon as the temperature has reached normal and clinical recovery from the respiratory infection has occurred, therapy may be continued with oral penicillin, 100,000 to 200,000 units three or four times daily.

It should be pointed out that the rationale on which this application of penicillin is based is

chiefly theoretical. The number of actual observations of rheumatic individuals who have had hemolytic streptococcal infections treated with penicillin is not yet sufficient to tell us just how much, if any, the incidence of rheumatic fever recurrence is reduced. Nevertheless, since penicillin therapy is essentially a harmless procedure, it would seem advisable to use it for all respiratory infections of possible hemolytic streptococcal etiology among rheumatic fever susceptible individuals.

Penicillin therapy of streptococcal respiratory infections should be used not only for individuals who have recovered from previous rheumatic fever but also for those who are ill at the time with an active rheumatic process.

Prevention of Hemolytic Streptococcal Infections.—If penicillin is to be used for the prevention of hemolytic streptococcal respiratory infections, a method of administration must be available which is practical as well as effective. Except during periods of limited duration, the parenteral administration of penicillin obviously is not practical. The antibiotic could not be given this way every day for several years or longer.

When penicillin is given by mouth in doses of 100,000 units to 200,000 units three times daily to individuals who are carriers of hemolytic streptococci, it will usually clear the throats of the organisms, provided care is taken to give the drug at least one hour before and at least two hours after the ingestion of food. Although the clearing is not permanent in some instances, most individuals will have negative throat cultures for hemolytic streptococci as long as penicillin is being administered.

From these observations it is reasonable to conclude that the oral administration of 100,000 to 200,000 units of penicillin three times daily will also prevent the implantation of most strains of hemolytic streptococci in the throats of individuals taking the drug. Obviously this method of preventing streptococcal infections could be expected to be effective only as long as the antibiotic is being taken, and obviously the cost of oral penicillin would make its long-time administration prohibitive for most individuals. However, since in time the cost of penicillin may be sufficiently reduced to allow for its use, or the effectiveness of oral preparations may be improved so that smaller daily doses can be used, space has been given here to this possible way of preventing rheumatic fever. The relative safety of penicillin gives it a decided advantage over the potentially toxic sulfonamides, but until penicillin becomes more readily available, the daily administration of small doses of sulfadiazine or sulfamerazine will continue to be the method of choice for the prevention of rheumatic fever recurrences.

Transportation to Low Incidence Areas

Although information regarding the geographic distribution of rheumatic fever is still far from adequate, the available data suggest that the disease is less prevalent in tropical and subtropical areas than in the more temperate zones. Variations in geographic distribution of rheumatic fever are probably related to variations in the incidence of hemolytic streptococcal infections, but more exact information is still needed regarding this relationship.

There is no reason to believe that living in a southern climate will have any influence on the course of an attack of rheumatic fever once the active process has been established. On the other hand, if patients who have recovered from rheumatic fever and who live in relatively high incidence areas are transported to geographic areas of low incidence, the chances of subsequent recurrences will be reduced. It is obvious, however, that if transportation is to have any lasting beneficial effect, the patient must remain permanently in the low incidence area.

Salicylates

Observations reported by several different investigators suggest that if salicylates are administered promptly at the time of respiratory infections and continued for one month, the incidence of rheumatic fever recurrences is reduced. The daily dose of salicylates when used for this purpose is not large and averages between 0.03 gram (½ grain) and 0.045 gram (¾ grain) per pound of body weight. The total daily amount is administered in divided doses during the day only. Aspirin, sodium salicylate, or other forms of salicylate can be used.

On the other hand, the value of salicylates for the prevention of rheumatic fever is questioned by some physicians who believe that the drug by its effect on fever and pains merely camouflages the disease so that its presence is unrecognized. It would appear that the last word regarding the

prophylactic virtues of salicylates, just as in the case of the drugs' therapeutic virtues, has not been said and must await further studies.

If one wishes to give moderate doses of salicylates at the time of respiratory infection with the hope of possibly preventing rheumatic fever, there certainly can be no real objection, provided one is also alert to the possible masking effect of the drug. However, the procedure should not be substituted for the prompt treatment of respiratory infections with penicillin, a preventive measure which holds more promise of being effective. If salicylates are given, they should be used in addition to penicillin.

Prevention of Bacterial Endocarditis

Next to recurrent rheumatic fever, bacterial endocarditis is one of the most feared complications for the individual with a rheumatic heart. Prior to the discovery of penicillin, it was an almost invariably fatal disease. Although it rarely appears when the heart is entirely normal, it can occur on valves which are only slightly scarred as well as in hearts that are more severely damaged.

It is known that bacterial endocarditis is due to the direct invasion of the blood stream by bacteria which then lodge and grow on the heart valves, but the cause for the bacterial invasions is not always evident. In some instances it is due to a respiratory infection; while in others it is due to the temporary opening up of small blood vessels in vascular areas such as at the time of tonsillectomy or tooth extractions. Even such simple processes as the vigorous cleaning of teeth and the scraping of tartar off teeth at the gingival margins have been known to be followed by subacute bacterial endocarditis.

Bacterial endocarditis cannot always be prevented, but there is reason to believe that its incidence can be reduced by the following precautionary measures.

1. All severe respiratory infections should be treated with effective doses of penicillin.

2. Penicillin should be administered at the time of tonsillectomy, other operations, and at childbirth. Therapy should be started if possible the day before the procedure and continued for several days after it.

3. Sulfadiazine should be given at the time of tooth extractions and other dental work which involves manipulation of the gingival margins of the gums. For these purposes the drug should be started twelve to twenty-four hours before the procedure and continued for a total of four days. A suggested dose of sulfadiazine is 1 gram (15 grains) three times daily. If the patient happens to be in the hospital, it is advisable to substitute penicillin therapy for the sulfadiazine because it probably is somewhat more effective. Similarly, when tooth extractions are necessary for individuals who have or have recently had rheumatic fever, it is safer to use penicillin than sulfonamides.

FIRST EXAMINATIONS OF "PRIME OF LIFE" GROUP COMPLETED IN HEART DISEASE STUDY

Completion of the first annual physical examinations and tests of more than 300 Saint Paul and Minneapolis men between the ages of forty-five and fifty-four, who are serving as volunteer "human guinea pigs" in the long-range cardiovascular disease study being conducted at the University of Minnesota, was reported in April by Dr. Ancel Keys, director of the University's laboratory of physiological hygiene.

Subjects in this age bracket taking part in the research project are designated as the "prime of life" group. Tests on some 200 young men, eighteen to twenty-five, were completed last fall.

Sponsored in part by the United States Public Health Service, the heart disease study is designed to discover the individual characteristics and personal habits which affect the development of arteriosclerosis and hypertension. Most important phase of the program is the yearly testing of a carefully selected group of men who were free of these diseases when first examined.

Insurance records, according to Dr. Keys, predict that half of these men will die of diseases of the heart and blood vessels. The project under way in the Minnesota physiological hygiene laboratory seeks to find out the "how" and "why" of this present gloomy picture. Eventually it is hoped that it will be possible to predict the danger faced by each individual and to adjust his manner of living so as to delay or prevent the heart disease which now kills approximately half of all adults in the United States.

From among 1,000 men who applied for the project, 311 were selected for the "prime of life" group. First condition for acceptance was that the subjects be in general good health and free from significant cardiovascular disease. However, tests and measurements made in the laboratory showed that many of the subjects selected were less healthy than had been supposed.

Of the 311 men chosen for the elder group, nine had abnormalities which required that they be dropped from the program, and at least ninety others were found to have already developed some abnormalities of the heart and blood vessels.

Some degree of hypertension was discovered in forty-four of these ninety men, and forty-six had abnormal electrocardiograms, fourteen of the group being abnormal in both respects.

ABDOMINAL HODGKIN'S DISEASE

With Report of a Case Involving Retroperitoneal Nodes

W. O. B. NELSON, M.D., and L. A. DWINNELL, M.D.
Fergus Falls, Minnesota

HODGKIN'S disease has various synonyms such as lymphogranuloma, pseudoleukemia, malignant granuloma, Sternberg's disease, Hodgkin's granuloma, Hodgkin's sarcoma, and sarcomatous Hodgkin's disease.

Isaacs[11] presents some interesting figures for this clinical entity and states there are less than 2,000 deaths per year (average for the years 1934-1936 was 1,614) in the United States from this cause. The rate has increased slowly. In 1921, the rate was 0.6 per 100,000 for white men, and 0.3 per 100,000 for white women. In 1931, it was 1.5 per 100,000 for white men, and 1.0 per 100,000 for white women. Thus the disease is generally accepted as being two to three times as great in men as in women. The percentage distribution of deaths in 1936 is also interesting: 7.34 per cent were under fifteen years; 40.52 per cent were in the age group from fifteen to forty-four years; 34.87 per cent were in the forty-five to sixty-four age group, and 17.27 per cent were over sixty-five years of age. Goldman and Victor[8] state that the youngest patient with Hodgkin's disease in their experience was five years of age, and the oldest was seventy-six years, with the highest incidence in the third and fourth decades. From these statistics, it is seen that one must be on the alert to diagnose this perplexing disease from childhood to senility.

No positive etiological factor has yet been determined. Ewing[7] cites several authorities who have found Hodgkin's disease to be closely allied to the acid-fast bacillus of tuberculosis. Others,[9] working with fresh tissues surgically removed from patients with Hodgkin's disease and inoculated into chickens, guinea pigs and rabbits, have been unable to prove the tuberculosis theory, and in their series no tubercle bacilli were found except in the case of proven tuberculosis. Bell[1] states that there are two views, the infectious and neoplastic, and that supporting the infectious theory is the febrile course and the presence of several cell types, and that in favor of the neoplastic is the 100 per cent mortality and the difficulty of distinguishing Hodgkin's disease from lymphosarcoma which is an admitted neoplasm. Busman and Johnson[2] state that the disease should be considered a malignant neoplasm since there is no uniformity in its symptom complex.

Ziegler's[15] classification is as follows:

1. Localized type.
2. Generalized type.
3. Mediastinal type.
4. Larvae or typhoidal type.
5. Splenic type.
6. Osteitic type.
7. Acute type.
8. Other types.

When one ordinarily thinks of Hodgkin's disease, one thinks of cervical adenopathy with easily palpable nodes and even a collar-like appearance of the enlarged glands in the neck. Desjardins[5] states that "Hodgkin's disease may start in any lymph nodes or agglomeration of lymphoid tissue in the body. Such as a node under the serosa of the gastric wall, a Peyer patch or lymph follicle in the small intestine, or in the lymphoid tissue of the vermiform appendix." But from a practical standpoint, he adds, these conditions start most frequently in the para-aortic nodes. Because the nodes which constitute this group drain the lymph from all the large and important organs in the abdomen, they are the most important group of lymph nodes in the body. Anatomically considered, they are extraperitoneal, or, as they are usually called, "retroperitoneal." Desjardins further states[8] that the enlargement of the retroperitoneal nodes as the earliest manifestation of the disease is much more common than is generally realized; 5 to 10 per cent of the cases of Hodgkin's disease begin in the retroperitoneal nodes.[1]

The symptoms of the involvement of the retroperitoneal nodes consist of diarrhea or constipation, progressive weakness, loss of weight and strength, anemia, abdominal pain, jaundice, ascites, frequently intense generalized pruritis, and a fever which may be persistent or intermittent. Cecil[4] states that in the abdominal form of Hodgkin's disease some of the most pronounced

From the Fergus Falls Clinic, Fergus Falls, Minnesota. Read at the annual meeting of the Northern Minnesota Medical Association, Brainerd, Minnesota, September 6, 1947.

types of remittent fever are seen. Frequently, these patients begin by complaining of loss of strength, loss of "pep," belching and a heavy feeling in the epigastrium, which gradually progress toward the other symptoms, such as increasing difficulty with eating, increasing tendency to constipation, increasing weakness and pruritis which may become almost unbearable. Thus the signs and symptoms are very variable and progressive. It should be re-emphasized that 5 to 10 per cent of all Hodgkin's disease starts in the retroperitoneal nodes, and that in the years 1934 to 1936 there were 1,614 reportable deaths each year from Hodgkin's disease, which would mean that from 80 to 161 of these started in the retroperitoneal nodes. This figure is not high considering the United States as a whole, but one must realize that there are thousands of deaths each year which are listed as due to senility or cardiac failure, without an autopsy being performed. One never knows when one of these rare diseases may be encountered.

One must bear in mind that at times the retroperitoneal nodes become so large that they displace the liver and spleen; that they may enlarge posteriorly and cause pressure symptoms on the lower thoracic vertebra or may even infiltrate through the intervertebral spaces and invade the spinal cord; and that if lower abdominal nodes are involved, pelvic symptoms may develop, and sometimes one may find erosion of the wing of the ilium or symptoms of pressure on the ureters, bladder or rectum.

Therefore, if one sees a patient with a temperature of the Pel-Ebstein type, with pruritis and other abdominal symptoms, with persistent negative Widal tests and negative blood cultures, one must think of Hodgkin's disease involving the retroperitoneal nodes. In some of these cases, of course, the superficial nodes eventually become enlarged, and then an accurate diagnosis may be made by biopsy and examination by a competent pathologist. The diagnosis of this type of Hodgkin's disease is not easy, even with all the numerous present-day laboratory procedures, and it is usually made at laparotomy or at autopsy, and then not grossly but microscopically.

The blood picture is not diagnostic since some of these patients show a leukocytosis while others show a leukopenia. A mild secondary anemia is usually found. Differential blood studies frequently show "toxic changes," with polymorphonuclear shift to the right with marked toxic granulation. Eosinophilia is present in about 5 per cent of the cases of Hodgkin's disease.[12] About 60 per cent show Dorothy Reed or Sternberg cells. It is only by biopsy that a correct diagnosis can be made.

The duration of the disease may be from several months to years. Therefore, if one is fortunate enough to make a diagnosis, the end results are still not very encouraging.

Treatment consists of x-ray therapy and general supportive measures.

Desjardins[5] states that for effective treatment it is important to recognize the different types of involvement that might be found, and to arrange treatment accordingly.

In irradiation, it is well to divide the abdomen in different fields, with the umbilicus as the starting point, using at least four fields. Then the rays in these fields should be conveyed toward the midline where most of the nodes are situated.

The posterior aspect must also be considered, and it should also be divided into four fields and similarly irradiated.

In women who are still menstruating, it is well to avoid irradiation of the pelvis and thus induce artificial menopause unless the iliac nodes are involved. If marked leukopenia exists, or when the general condition does not warrant giving massive doses, it is well to give smaller doses until conditions have improved sufficiently to give larger ones.

In these cases, the doses should be repeated every four weeks up to the point of tolerance.

The technical aspects of x-ray therapy are left to the radiologist. It should not be assumed that x-ray therapy will cure these patients, but it may give them a few added weeks or months of relief from their symptoms and a few added weeks of life.

In very severe cases in which symptoms do not respond to irradiation therapy, Methyl-Bis Compound may be tried. It has been found[14] that this will cause some amelioration of the symptoms, but a cure cannot be expected. The therapeutic use of radioactive phosphorus in the treatment of eleven selected patients with Hodgkin's disease did not prove of therapeutic value in the dosage used.[10]

For the severe pruritis, roentgen ray therapy may be given.[11] Blood transfusions should be given when needed. Vitamins may be of some

value. Hematinics should be given for the usual secondary anemia. A nourishing diet is essential. An attempt should be made to maintain the fluid and electrolyte balance.

We would like to report a case of Hodgkin's disease involving the retroperitoneal nodes without affecting the abdominal organs.

Case Report

The case is that of a seventy-four-year-old white man who was first seen as an outpatient at the clinic in March, 1944. He was treated for a nonproductive cough, which responded well to treatment. At that time his blood pressure was 110/80, and his physical examination was otherwise essentially negative.

He returned to the clinic on September 3, 1946. He stated that he had been well until two to three weeks previously when he first noted anorexia and constipation. For the past few days he had noticed mild generalized itching. Chest and gastrointestinal x-rays were negative. He was treated with colloidal baths and similar treatment without benefit, and was admitted to the hospital on September 20. At that time his blood pressure was 100/76. Except for excoriations from scratching, physical examination was negative.

His urine on admission showed the specific gravity to be 1.009; there was a trace of albumin present, and there were 150 to 200 pus cells and 8 to 10 red cells present. His hemoglobin was 28 per cent; the white blood cell count was 8,950. A differential count showed toxic granulation of the cells, but was otherwise within normal limits. The blood was Rh positive.

After considerable difficulty in obtaining a compatable donor, a transfusion of blood was given. He was treated with increasing doses of ultra-violet light, colloidal baths and ferrated liver. On the sixth hospital day his temperature rose as high as 102.6°. Physical examination was negative. The red cells had almost disappeared from his urine; the number of white cells had reduced to 8 to 10 per high power field. A chest X-ray taken at this time was negative. Sulfathiazole was given empirically. His temperature gradually became normal in forty-eight hours, and the sulfa was discontinued. His general condition improved, and he was discharged from the hospital ten days after admission. At that time his hemoglobin had risen to 46 per cent; the red blood cell count was 3,540,000. His itching was controlled.

He was readmitted to the hospital on October 7 for a blood transfusion.

He was last admitted to the hospital on November 16, 1946. He had become acutely ill at home with severe chills and fever. He had noted generalized weakness for the past few days. The severe generalized itching had returned. Examination showed a tall thin white man who appeared acutely ill. There was a generalized exfoliative type of dermatitis. His blood pressure was 104/60; the temperature was 102°, the pulse 100, and the respirations 24. The examination was otherwise negative.

Laboratory examination on admission showed the urine to contain a trace of albumin and 40 to 50 white blood cells per high power field. The hemoglobin was 56 per cent and white cell count 15,750. A galactose tolerance test and a bromsulphalein test were normal. Repeat chest and gastrointestinal tract x-rays were negative.

The patient became progressively weaker, followed a downhill course in spite of repeated blood transfusions, and expired on December 2, 1946, seventeen days after his last admission and approximately 110 days after the onset of his symptoms.

On postmortem examination the external appearance showed a slight bronzing of the skin. The chest contents were within normal limits save for arteriosclerosis of the aorta. There was a large firm irregular mass in the left abdominal fossa which was retroperitoneal. The distal one-third of the transverse colon and the proximal one-half of the descending colon were firmly bound down to it. A few loops of small bowel were also adherent to the mass, but there was no evidence of encroachment of the lumen. The mass incorporated the aorta and vena cava. It measured 18 by 12 cm. The perivertebral, aortic, pancreatic, and mesenteric lymph nodes were enlarged and firm, but were discrete. The left kidney and adrenal could not be identified as such. The ureter was found to be emerging from the mass. It was markedly thickened and indurated throughout its course to the brim of the pelvis; beyond that point it was normal. On section, the cut edge everted, and the cut surface was seen to contain many small areas filled with thick semi-liquid purulent material. The bladder was markedly trabeculated, and in the vicinity of the left ureter there were three small diverticula, the largest of which contained approximately 30 c.c. of urine. There was a small median bar on the posterior lip of the urethral orifice which apparently accounted for the condition of the bladder and of the urine. The right kidney contained a few small cysts, but was otherwise normal in appearance. The lymph nodes of the pelvis and epigastric area were normal. The spleen and liver showed no evidence of tumor.

A diagnosis of Hodgkin's disease was made from the microscopic sections. They were sent to Dr. E. T. Bell at the University of Minnesota, who confirmed the diagnosis.

Sections of the remaining organs failed to show evidence of Hodgkin's infiltration. Additional diagnoses were arteriosclerosis of the kidney, and fatty infiltration and cloudy swelling of the liver.

Discussion

Fever is an important and significant symptom. The remittant type of Pel-Ebstein is the most important. In our case such episodes occurred. It is important to point out that, contrary to popular opinion, this type of fever is seen in cases other than Hodgkin's disease, notably in patients with caseous tuberculosis and necrotic tumors. Some authors[3] state that it should be "regarded with alarm and frequently indicates that the disease is advancing rapidly." Others[5] state that in cases

"known to have Hodgkin's disease, fever or itching, or both, mean that the condition has involved the retroperitoneal nodes." It is evident that the differential diagnosis of any case presenting idiopathic fever or itching must include Hodgkin's disease, more specifically Hodgkin's disease of the retroperitoneal nodes.

Laboratory findings are usually not significant. An increase in eosinophils is constant enough to be of significance. In some cases it may be as high as 60 per cent. A secondary type of anemia usually develops.

The disease may remain localized as in the case we have presented, but it usually extends along the spine. It may invade the intervertebral foramina; herpes zoster is a frequent symptom of this complication. The spleen, liver, lungs, bone marrow, and superficial lymph nodes are usually involved, frequently in that order.

On gross examination the nodes may strongly suggest neoplasm. They are enlarged, firm, pale, and tend to remain discrete. Microscopically the picture is quite variable, in the same case as well as in different cases. Hodgkin's disease is a disease involving the reticulo-endothelial system. In early infiltration and at the periphery of an involved group of nodes, the picture is frequently that of simple hyperplastic lymphadenitis. The normal landmarks are soon wiped out by the reticulum which is the result of an overgrowth of the lymphoid tissue stroma. This change is prominent early, and is the important diagnostic feature. Lymphocytes tend to become less prominent with the ingrowth of other cells types. A few plasma cells are almost always present. They may be so prominent as to overshadow the other cell types. Eosinophylic cells are usually numerous, but may be entirely absent. The giant (Dorothy Reed) cells are large cells with pale staining cytoplasm and vesicular nuclei. The cell is frequently multinucleated or has a multilobed nucleus. The nuclear membrane stains deeply, and the nucleus contains much chromatin. These cells tend to be more numerous in early lesions.

In old bulky lesions, and in febrile lesions, necrosis may be a prominent feature. This may be followed by extensive fibrosis. These fibrotic bands may comprise the bulk of the tumor.

The microscopic picture may resemble leukemia or lymphosarcoma so closely that diagnosis is impossible. This may be true of biopsy specimens or of specimens obtained at autopsy. In such cases the clinician must be content with a diagnosis of malignant lymphoblastoma. The finer diagnosis is not of importance, as the prognosis and treatment are the same.

Conclusions

1. Although Hodgkin's disease of the abdomen is not a common entity, it is probably more frequent than has been suspected.

2. Hodgkin's disease of the abdomen must be included in the differential diagnosis of any patient presenting idiopathic fever and itching, or other bizarre abdominal symptoms.

3. The positive diagnosis of Hodgkin's disease usually requires microscopic examination of biopsy material.

4. Deep x-ray therapy is the treatment of choice. Added months or years of comfortable life justify intensive treatment.

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CLINICAL SIGNIFICANCE OF GROSS HEMATURIA

LAURENCE F. GREENE. M.D.
Rochester, Minnesota

GROSS hematuria usually evokes one of two responses in both patient and physician. The more intelligent patient becomes duly alarmed and promptly consults his physician. The less fortunate patient will pay scant heed to this symptom or will disregard it entirely; the intermittent appearance of blood in the urine will lull this patient into a false sense of security. He will seek medical aid only when the hematuria has persisted for several years and at a time when it is difficult or impossible to cure.

Physicians likewise respond in one of two manners. The more enlightened or conscientious physician will realize that gross hematuria denotes the presence of a pathologic lesion in the urinary tract and that it is his responsibility to determine the source of the blood. To fulfill his responsibility, the physician will either carry out careful and complete urologic investigation or advise that such investigation be made. The less conscientious physician will, without adequate investigation, prescribe tablets or pills, hoping that the hematuria will cease—which it frequently does, only to reappear again.

This consideration will be limited to observations concerning the urologic causes of gross hematuria. This symptom may be produced by a host of medical diseases such as hemorrhagic nephritis, hemophilia and acute leukemia, but a discussion of these conditions is not germane. Of the urologic causes of gross hematuria, malignant lesions and infections of the urinary tract lead the list; these are followed by urinary calculi and prostatism.

It might be enlightening to consider the thoughts and observations of a urologist when confronted with gross hematuria. The age of the patient is important. Gross hematuria is rare during infancy and childhood. When it occurs, it usually is in response to infection, which usually is the result of congenital obstruction in some part of the urinary tract. Thus, a congenital obstruction at the ureteropelvic juncture may produce hydronephrosis which becomes infected and results in gross hematuria. Neoplasms of the urinary tract are uncommon in this age group, and gross hematuria is relatively infrequent. The common malignant tumors of infants, as Wilms' tumor or sarcoma of the bladder or prostate gland, infrequently produce gross hematuria. The former usually is recognized by the detection of an abdominal mass, whereas the latter produces urinary obstruction.

In young adults and persons up to the age of forty, gross hematuria is most commonly a manifestation of infection in the form of pyelonephritis or cystitis. The infection is most commonly produced by organisms belonging to the colon-typhoid or staphylococci groups; tuberculous infections are also common in this age group. Gross hematuria associated with renal or ureteral colic is not uncommon in the presence of renal or ureteral calculi. Neoplasms of the urinary tract are relatively uncommon in this age group.

After the age of forty years, gross hematuria as a result of neoplasms of the kidney, ureter or bladder becomes more frequent. In men of this age group, prostatism, both benign and malignant, is a common cause of hematuria; furthermore, the incidence of gross hematuria is greater in benign prostatic hyperplasia than in prostatic carcinoma. Infection, both specific and nonspecific, and urinary calculi are less common causes of gross hematuria in this age group.

A detailed description of the nature of the hematuria may help to localize the site of the lesion. In males, it should be determined whether the hematuria is initial, terminal, total or independent of micturition. Initial hematuria is characterized by the appearance of blood only at the start of micturition; during the act the urine becomes clear. Initial hematuria is usually produced by prostatism or lesions in the prostatic urethra. In such conditions, blood or blood clots accumulate in the prostatic urethra; when urination is initiated the initial urine is bloody and the remainder clear. In terminal hematuria, clear urine is passed until termination of the act, when the urine become bloody. Terminal hematuria may result from prostatism or lesions in the prostatic urethra; in such instances, the sudden con-

From the Section on Urology, Mayo Clinic, Rochester, Minnesota.
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traction of the accessory muscles of micturition is responsible for the terminal hematuria. Rarely vesical neoplasms may be traumatized by the contraction of the bladder and produce terminal hematuria. In total hematuria the urine appears bloody throughout micturition. Total hematuria is usually produced by lesions of the kidney and ureter. The blood enters the bladder and becomes well mixed with the urine. Lesions in the bladder likewise may result in total hematuria. Rarely lesions of the prostatic urethra will bleed into the bladder and result in total hematuria. Bleeding independent of micturition is produced by lesions situated external to the external sphincter.

The color of the hematuria may be of some help in diagnosis. Dark brown urine usually results from bleeding lesions in the upper part of the urinary tract whereas bright red urine is usually associated with lesions in the lower part of the urinary tract. It may be extremely difficult to determine whether bleeding arises from the urinary or genital tract in females; however, careful catheterization and examination of the urine will usually settle the question.

Particular attention should be paid to certain phases of the physical examination of a patient who complains of gross hematuria. Renal enlargement due to neoplasm, hydronephrosis, cyst or polycystic kidney may be detected. Tenderness in the flank, a result of infection, may be elicited. Careful palpation of the supraclavicular area should be carried out because hypernephroma may metastasize to the lymph nodes at that site. The appearance of a left varicocele late in life is suggestive of a neoplasm of the left kidney. This condition is the result of the anatomic relations of the left spermatic vein. Neoplasms of the kidney tend to invade and block the renal vein. Inasmuch as the left spermatic vein empties into the left renal vein, the blockage of the latter vein is transmitted to the spermatic vein and results in varicocele. If the neoplasm invades the inferior vena cava, dilated abdominal veins may be visible.

The suprapubic area should be examined carefully in order to detect the presence of a distended bladder, tenderness that may accompany cystitis, or a mass due to a vesical neoplasm. By means of a careful rectal examination of a man, a diagnosis of benign prostatic hyperplasia or prostatic carcinoma may be made. By rectal palpation it may be impossible to distinguish prostatic carcinoma from tuberculous prostatitis or prostatic calculi, and other diagnostic aids may be necessary. Infiltration of the base of the bladder by vesical neoplasm may be readily detected by rectal palpation.

In cases in which the patients are females, considerable information may be obtained by vaginal examination. In this manner, infiltration caused by vesical neoplasm and tenderness caused by cystitis may be detected. It may even be possible to palpate a calculus low in the ureter by vaginal examination.

Examination of the external genitalia may aid in the diagnosis. The presence of urinary tuberculosis may be suggested by noting evidences of genital tuberculosis, inasmuch as these two conditions are frequently concomitant. Tuberculosis of the vas deferens and epididymis usually results in enlargement, hardening and nodularity of these organs. A urethral neoplasm may be palpable along the course of the urethra.

Every patient complaining of gross hematuria requires complete urologic investigation by a capable urologist. It is axiomatic that in addition to cystoscopy such patients will require investigation of the upper part of the urinary tract, either by intravenous urography or retrograde pyelography. The source of hematuria in a man who has prostatic hyperplasia may indeed be prostatic, but such a patient belongs to the age group in which bleeding may arise from a renal neoplasm.

Hematuria is rarely an emergency unless it is prolonged and exsanguinating in character. Until the time when the patient can be placed in proper hands, there are several steps that may be taken. If it is suspected that the bleeding arises from the kidney or ureter, the patient should be put to rest in bed and necessary narcotics given to relieve pain. A large fluid intake should be urged to prevent the formation of clots and subsequent "clot colic." If the bleeding is vesical or prostatic in origin and associated with the formation of clots, an effort should be made to remove the clots. Clots in the bladder act as a foreign body and produce vesical spasms which aggravate the bleeding. The clots may best be removed by a urethral catheter and syringe.

EXPERIENCES IN THE TREATMENT OF VOLVULUS OF THE SIGMOID

CHARLES E. REA, M.D.
Saint Paul, Minnesota

WHILE volvulus of the sigmoid does not occur very commonly in this part of the country,* the operative mortality rate reported by many clinics is as high as 30 to 60 per cent. As no one seems to have had an extensive surgical experience with this condition, I am offering a review of the literature and my own limited personal experience, with suggestions as to how these cases may be treated to lower this mortality.

Recently Bruusgaard has described a nonoperative method for reduction of the torsioned and distended sigmoid loop by inserting a tube per rectum past the site of torsion of the volvulus. By means of a proctoscope, the examiner notes the condition of the bowel, the appearance of the mucous membrane, and the blood supply at the site of the torsion. When the site of torsion has been located, a lubricated rubber rectal tube, 60 cm. long and about the thickness of a finger (6 to 10 mm. in diameter), is guided past the site of the obstruction. If the treatment is successful, there is a forceful evacuation of flatus and thin stool and the patient feels instant relief. The result may be verified by x-ray examination.

Bruusgaard found the site of torsion of the sigmoid to be 15 to 25 cm. from the anus. After reduction of the volvulus, the tube should be sewed to the anal ring and left for two or three days to prevent recurrence. While there is danger of perforation of the bowel and the possibility that one may fail to operate upon patients with strangulation and gangrene, Bruusgaard reports a mortality of only four in 136 treatments, which makes the above objections seem more apparent than real.

The above procedure would seem to be a valuable one, as experience is gained with it. I have had occasion to use it only two times. In one case, the return of bloody fluid through the inserted tube gave unsuspected evidence of a strangulated volvulus which was verified at operation. In the other case, the patient had a volvulus of the sigmoid together with a carcinoma of the ascending colon just above the cecum. The amount of flatus removed by rectal intubation of the volvulus was not proportionate to the amount of gas seen by a flat plate of the abdomen. The true condition was found at abdominal exploration.

In cases of volvulus of the sigmoid in which there is *no* gangrene or any other severe bowel damage, at the site of torsion, Bruusgaard advises reduction of the volvulus by proctoscopy and intubation, and in a free period of the disease, doing a closed resection of the sigmoid. Wangensteen, at the University of Minnesota Hospitals, has treated two cases of the volvulus of the sigmoid in this manner with successful results. In our experience, however, in the last four cases of volvulus seen, this procedure would have been feasible in only one case, as the blood supply to the volvulus was compromised in three cases.

The usual operative procedure in cases of volvulus has been a bowel resection of the Mikulicz exteriorization type. In my experience, this operation has proved to be a bad one in cases of volvulus of the sigmoid. It is true that one patient (Ancker Hospital, No. 28962) also had Parkinson's disease and another (Ancker Hospital, No. 92058) was elderly, feeble and debilitated, but this high mortality in similar cases has been the experience of others.

Bruusgaard reported five patients with volvulus of the sigmoid treated by exteriorization by the method of Mikulicz; all died. One reason for this mortality is that in cases of volvulus of the sigmoid, the site of the torsion is so distal in the sigmoid flexure that, in doing a Mikulicz resection, there is some risk of producing too much pull in the efferent loop of the sigmoid colon, with resultant gangrene and peritonitis. We have had one case where the efferent loop subsequently retracted into the peritoneal cavity, causing peritonitis and death. To correct this, Bruusgaard recommends that after resection of the gangrenous sigmoid, the distal stump be inverted and buried and the proximal part be brought out as a

(Continued on Page 685)

*In 1946 and 1947, three of the largest hospitals in Saint Paul, Minnesota, record only eight cases of volvulus of the sigmoid: Ancker Hospital (850 beds) seven cases, St. Joseph's Hospital (262 beds) one case, and Miller Hospital (275 beds) no cases.

EXPERIMENTAL STUDIES OF LIVER AND THORACIC DUCT LYMPH

JOHN H. GRINDLAY, M.D., JAMES C. CAIN, M.D., JESSE L. BOLLMAN, M.D., and EUNICE V. FLOCK, PH.D.

Rochester, Minnesota

RELATIVELY few studies have been made of lymph, not because of lack of interest in the subject, but because it has been difficult technically to obtain even small samples of lymph. For example, there is only the most meager information concerning the quantity of lymph coming from a particular organ, such as the liver, or concerning its quantity and composition from a normal animal under conditions such as those following the digestion of a meal.

The object of this study was to investigate hepatic lymph under various experimental conditions. This meant the finding of a method of obtaining a continuous flow of hepatic lymph, a flow that continued even after recovery of the animal from anesthesia. Several difficulties stood in our way: threadlike smallness and delicateness of lymphatics, the almost colorless transparency of liver and lymph and lymphatics, the presence at frequent intervals of valves which interfere with the introduction of a cannula, and the fact that when the lymphatic was punctured it collapsed to the point of invisibility. Moreover, the rate of flow of hepatic lymph is very slow, and the lymph clots rapidly. Our first problems, therefore, were to find a flexible small cannula in which lymph would not readily clot, to develop a technique of cannulation, and to find the proper place to cannulate for hepatic lymph.

The animal used in this study was the dog. Flow of hepatic lymph was measured in thirty-three dogs, twenty-two of which had recovered from anesthesia. Flow of lymph from the thoracic duct was measured in twenty-two dogs after their recovery from anesthesia. The best lymph flow was obtained from young, growing dogs.

The cannula used consisted of a length of capillary size plastic tubing, long enough to be brought out through a stab wound. The tubing was a polyvinyl resin tubing, manufactured under the trade name "transflex" (size 24).* This tubing is not only flexible, but transparent, elastic and smooth-walled. It can be cut easily and may be sterilized by boiling. Transflex tubing of this size is quite inert biologically. Clotting of lymph within the tubing does not readily occur.

After the presenting surface of the lymphatic to be cannulated had been stripped free of overlying tissue, a tiny hole was cut in it. The hole was held open by a fine seeker of blue glass; and the tip of the plastic tube, which was cut on a bevel of about 45 degrees, was introduced beside the seeker into the hole. After the tube was in place, the seeker was withdrawn, and a previously placed ligature was tied about the lymphatic and tubing.

Liver lymphatics emerge from the liver at its hilus and, passing caudally along the free edge of the gastrohepatic ligament, enter a main hepatic lymph node at the caudal end of the foramen of Winslow. These lymphatics are extremely small, thin-walled and numerous, and anastomose with each other freely. Several large efferent lymphatic trunks emerge from the hepatic lymph node and pass dorsally to join the cisterna chyli in the retroperitoneal region. We introduced our cannula through the largest of these efferent lymphatics and occluded the remaining efferent trunks by the mass ligature which held the plastic tube in place. Possible contamination of lymph from the upper part of the duodenum and the pancreas was prevented by one or more mass ligatures around lymphatics entering the hepatic lymph node at its caudal end.

The thoracic duct was usually cannulated behind the descending aorta rather than at the usual site where it empties into the left subclavian vein. Because there are no valves in the thoracic duct, the tubing could in most cases be slipped down the duct until its tip was in the cisterna chyli.

In the trained dogs, hepatic lymph usually flowed for a day and often for as long as two and a half days. Thoracic duct lymph flowed for as long as eight days. The usual flow for the average-sized young dog was 280 c.c. of hepatic lymph and 700 c.c. of thoracic duct lymph for twenty-

This is an abridgment, in part, of a thesis submitted by Dr. Cain to the faculty of the graduate school of the University of Minnesota in partial fulfillment of the requirements for the degree of M.S. in Medicine.

Dr. Cain is a Fellow in Medicine and Drs. Grindlay, Bollman and Flock are with the Division of Experimental Medicine, Mayo Foundation, Rochester, Minnesota.

*The transflex tubing used in this study was furnished by the courtesy of the manufacturer, the Irvington Varnish and Insulator Co., Irvington, New Jersey.

four hours. These dogs lost weight rapidly during the time the lymph fistula remained open and signs of dehydration and hypoproteinemia developed, which in the case of the dogs with fistulas of the thoracic duct were controlled only by constant intravenous reinjection of lymph.

There was evidence that we obtained virtually all the hepatic lymph by the technique of liver lymphatic cannulation. For example, T1824 dye, which had been injected into the several lobes of the liver in several dogs, appeared in hepatic lymph but not in thoracic duct lymph. Also, after the common duct had been obstructed, the bilirubin of hepatic lymph increased rapidly, while bilirubin did not appear in thoracic duct lymph until it appeared in the blood. We believe also that our technique of cannulation of the thoracic duct permits us to obtain almost all the lymph coming from below the diaphragm.

The protein content of hepatic lymph was high as compared to that of thoracic duct lymph. Thoracic duct lymph had a protein content about half that of plasma, while hepatic lymph had a protein content five sixths that of plasma. Our experiments showed that intravenous infusion of fluid, salt and glucose, comparable in volume to that present in the large amount of lymph lost, did not restore dogs to a normal state. Present evidence indicates that a loss of hepatic lymph protein, either from drainage of the liver lymphatics or from drainage of the thoracic duct (into which the liver lymphatics empty), produces loss of weight and weakness.

Hepatic lymph was transparent and had a faintly yellow color. During anesthesia the bilirubin content and depth of yellow color increased. After a meal, thoracic duct lymph became white, and hepatic lymph remained clear. Both liver and thoracic duct lymph contained slightly more glucose and chloride than plasma but the same amount of inorganic phosphate. The alkaline phosphatase content of liver and thoracic duct lymph was about half that of plasma. Exercise increased the flow of hepatic lymph approximately 80 per cent and that of thoracic duct lymph 200 per cent. A meal increased both liver and thoracic duct flow approximately 75 per cent, and intravenous infusion of solution of glucose likewise increased both liver and thoracic duct lymph flow 75 per cent. Two dogs with experimental chronic cirrhosis of the liver had greatly dilated liver lymphatics and an output of hepatic lymph ten to twenty times greater than normal. This and other experimental observations suggest that ascitic fluid may be formed by leakage of hepatic lymph rather than by transudation from tissues of the portal bed. Obstruction of the liver lymphatics was produced on one occasion. Although the biliary tract was unobstructed in this dog, jaundice resulted. This experiment suggests the possibility that jaundice in cases of carcinoma invading the gastrohepatic ligament, in which obstruction of the bile ducts cannot be demonstrated at necropsy, may be caused by carcinomatous blockage of liver lymphatics.

Summary

By using flexible plastic (polyvinyl resin) tubing of small diameter, as cannulas, we have been able to cannulate the extrahepatic liver lymphatics in twenty-two dogs and the thoracic duct in twenty-two dogs and obtain a continuous flow of lymph after the animal had recovered from the operation. Clotting of lymph appears not to occur rapidly in such tubes.

By cannulating the main efferent lymphatic of the liver lymph node and occluding the other efferent lymphatics, we have been able to obtain most of the hepatic lymph. By cannulating the thoracic duct behind the descending thoracic aorta, we usually have been able to slip the plastic tube down to the cisterna chyli and obtain most of the abdominal and hind leg lymph.

The usual flow of hepatic lymph was 280 c.c. for twenty-four hours, of thoracic duct lymph 700 c.c. Severe loss of weight and signs of dehydration and hypoproteinemia developed rapidly. Flow of liver and thoracic duct lymph was increased by exercise, by feeding of a meal and by intravenous infusion of saline or glucose solution.

The protein content of hepatic lymph is about double that of thoracic duct lymph and nearly equal to that of plasma. Chloride and glucose content of both liver and thoracic duct lymph were slightly high as compared to plasma, with inorganic phosphate the same and alkaline phosphatase lower.

Two dogs with chronic experimental cirrhosis of the liver had very large outputs of hepatic lymph.

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE STUDY

E. W. MINTY, M.D., O. L. McHAFFIE, M.D., and A. H. WELLS, M.D.
Duluth, Minnesota

DR. V. J. PACIOTTI: A sixty-three-year-old housewife (Case No. 3218) was admitted to this hospital on September 13, 1945, complaining primarily of vomiting. She expired twenty-one days later. Her present illness appeared to begin two days before admission to the hospital, when she suddenly began vomiting about one hour after her noon meal. There was a moderate chill at the time of the onset. At first there was no pain. She had a bad taste in her mouth. Her bowel movements remained normal, and there was no diarrhea or constipation. The nausea and vomiting continued so that she could not retain anything on her stomach up until the time of her admission. A physical examination revealed a well-nourished, elderly, alert white woman, complaining of vomiting and very little abdominal pain. There was decreased excursion of the right chest as compared with the left, but no râles or areas of consolidation. The heart appeared to be enlarged to the left by 2 or 3 cm.; the rate was 120 per minute, and sounds were rather feeble. There were no murmurs. The apex was felt in the midclavicular line and the sixth intercostal space. The white blood cell count was 15,700, and her blood pressure was 120/80; temperature was 99.2° F., and the urinalysis was normal. There was some tenderness in the mid-abdomen with marked rebound tenderness and no muscular rigidity or abdominal distension.

The past history revealed that the patient had had attacks of right upper quadrant pain over a period of about two years, beginning thirty years ago. These shooting pains went through to her back, and she became quite ill but never consulted a doctor.

The clinical diagnosis was acute appendicitis. The immediately excised appendix was considered by the pathologist to be free from inflammatory change. However, the surgeon felt that it was completely reduplicated upon itself, and the source of some difficulty. At the time of the appendectomy, the gall bladder was found to be obliterated and surrounded by numerous old fibrous adhesions. No stones were found in it, and none could be felt in the common duct. No other pathologic condition was found in the pelvis or abdomen.

Postoperatively, she continued to be distended and vomited small amounts two or three times daily. On September 23 and 25, roentgenograms (Fig. 1) revealed a "stepladder" type of severe distension of the small intestines which were interpreted by Dr. A. L. Abraham as being probably due to intestinal obstruction. She continued vomiting two or three times a day and noticed on occasions some burning pain in the lower abdomen. On September 23, 500 c.c. of liquid fecal matter were vomited. On September 24 she had some mild abdominal pain and was very weak. An x-ray examination revealed some elevation of the right diaphragm. There were large bowel movements described by the nurse. On September 29 she was still vomiting occasionally. On October 1 her temperature rose to 102.8° F. The white blood cell count was 22,000. On October 2, under local and general anesthesia, through the partially eviscerated operative wound, a small loop of ileum was found protruding between the edges of the fascia and muscle. This was returned to the abdominal cavity, and the wound was closed with through and through chromic sutures. There appeared to be an improvement in the next twenty-four hours, but then she rapidly lost strength and expired on October 4.

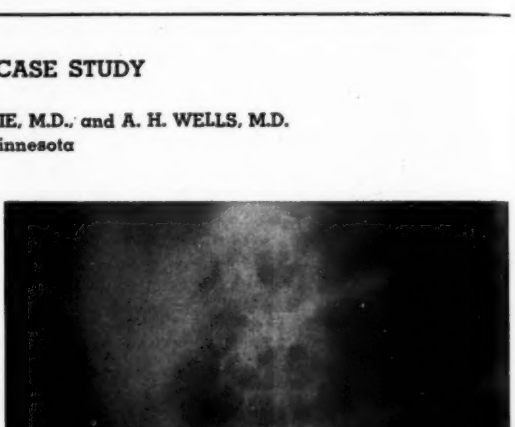

Fig. 1. "Stepladder" pattern of distension of small intestine.

DR. A. H. WELLS: The case is now open for diagnoses.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

PHYSICIANS: Gallstone ileus. Carcinoma of colon with obstruction. Acute generalized peritonitis with paralytic ileus complicating the appendectomy.

DR. A. H. WELLS: Dr. Moehring is right. The patient did have a gallstone ileus. An oval, finely granular surfaced calculus, measuring 4.5 cm. in one diameter and 3 cm. in the other, was found at the necropsy, tightly wedged in the ileum (Fig. 2) 4 feet above the ileocecal valve. There was, in addition, a pinpoint perforation of the iliac wall 25 cm. proximal to the site of the calculus, and a severe acute generalized peritonitis with 1,000 c.c. of liquid purulent exudate dispersed through the peritoneal cavity. The site of perforation was due to erosion of the calculus through the gut wall possibly on about October 1 when there was a severe rise in

Fig. 2. Gallstone calculus in ileum. Also, a probe is shown passing through cholecysto-jejunostomy fistula.

temperature to 103° F. There was a huge healed cholecysto-duodenal fistula with surrounding dense old fibrous adhesions and mildly distended common and cystic ducts. The only other significant changes were the usual toxic effects of the peritonitis. Dr. Moehring, what led you to the diagnosis?

DR. H. G. MOEHRING: There was a past history of gallstone colic, followed many years later by a sudden attack of intestinal obstruction of unknown etiology, with fecal vomiting and a typical roentgenogram of small intestine obstruction.

Discussion

DR. E. W. MINTY: Gallstone ileus is one of the late and severe complications of cholelithiasis. In spite of the purely mechanical nature of the obstruction, it carries a mortality of from 40 to 50 per cent, thus warranting a better understanding of its nature. I will review briefly some of the pertinent facts relative to a gallstone ileus for your consideration.

Etiology

Gallstone ileus occurs in approximately 2 per cent of all obstructions of the small bowel. Many reports have a very small number of cases, and as it is difficult to determine the exact incidence of gallstone ileus, I think it should be stated that it is probably much more common than we are aware of at the present time. Wakefield, Vickers and Walters[4] in a study of 176 cases of cholecysto-enteric fistulas found only ten cases of ileus; therefore, it is evident that the majority of the gallstones which eroded into the lumen of the bowel were passed through the rectum without causing symptoms. Their conclusions were that the presence of biliary fistulas must be a fairly common condition, and just has not been recognized in the past. As nearly all cases of gallstone ileus are preceded by cholecysto-enteric fistulas, I think it is well that we review briefly the etiology and pathogenesis of this condition before discussing gallstone ileus in detail.

Cholecysto-enteric fistulas are late complications of chronic cholecystitis and cholelithiasis.[2] They may rarely occur secondary to perforation of a duodenal or gastric ulcer, secondary to surgical trauma, and secondary to rupture of an acute cholecystitis with abscess formation and erosion through the duodenum or elsewhere in the bowel. However, the majority of cholecysto-enteric fistulas are between the gall bladder and the duodenum. As this condition is a late complication of chronic cholecystic disease, we would expect to find it in elderly people. Most of the cases reported are in individuals past fifty, with the majority between sixty and seventy years of age, and the incidence seems to be about 4 to 1 for women, as compared to men, which is approximately the same as cholecystic disease. Bear in mind that a cholecysto-enteric fistula has to be present to form a gallstone ileus.

A stone is extruded into the bowel, most likely into the duodenum, passes down the small bowel where it may lodge anywhere, producing an obstruction. A stone up to 2.5 cm. in diameter will probably pass without causing a definite obstruction; however, smaller stones have been known to produce definite bowel obstruction, especially if they have sharp edges which may catch on the lining of the bowel and stop the progress of the stone. The stone may lodge anywhere from the stomach to the rectum, but in the majority of the cases, it lodges in the terminal ileum, as this has the narrowest lumen of any portion of the intestinal tract.

Diagnosis

The text book picture of sudden onset of acute upper intestinal obstruction in a patient, generally an older woman, with a past history of gallstone colic and typical food dyscrasias, should always lead to including calculary ileus in the differential diagnosis. Symptoms of a definite "gall-bladder" attack preceding obstruction occur in approximately 50 per cent of the cases. Some patients may give a history of bowel obstruction or obstipation, which is characteristic of partial obstruction. Complicating the matter is the fact that many elderly people have periods of obstipation due to atonic bowel action and frequently take laxatives for this common complaint. They may or may not have had a previous history of gall-bladder difficulties. Partial obstruction is usually intermittent, and may be present for variable periods of time. There have been cases reported where partial obstruction symptoms were present for over a year before the true diagnosis was made.

The stone may cause a partial obstruction as it progresses, and then it may loosen up and pass on down the bowel, and thus relieve the symptoms, to lodge in a lower portion and produce a partial obstruction there, and the process is repeated until finally the stone reaches the terminal ileum, where it is apt to produce complete bowel obstruction. The chief complaint of these elderly people is that their bowels do not work right. They have a tendency to be partially constipated, and they cannot get their bowels to function properly. They have no distension, very little pain, and as a rule do not appear acutely ill. They may or may not have an elevation in leukocyte count, depending upon the condition of the bowel, as gallstone ileus is purely a mechanical proposition, and since many of them are only partially obstructed, there is very little distension of gas in the proximal ileum.

The biggest factor in making the diagnosis in gallstone ileus is first to suspect it, and second, to rule it out definitely in all elderly people suffering from partial bowel obstruction or definite bowel obstruction. The majority of these patients have been operated upon with a diagnosis of a bowel obstruction without even suspecting or even diagnosing the nature of the obstruction preoperatively, and as most of these people are elderly and in very poor health, the operation results in a fatal termination. In many instances, only at autopsy is the true diagnosis determined. Therefore, any patient who has symptoms suggestive of a partial obstruction should be questioned very carefully relative to any history of chronic gall-bladder disease or of previous gallstone colic. Occasionally a patient will give a history of having passed a gallstone by rectum. If there is such a history, by all means one should think of a gallstone ileus in these cases.

Once the condition is suspected, it can be definitely determined by x-ray, preferably before complete obstruction occurs. Rigler[3] states that all cases can be diagnosed by x-ray study, if the time is taken to work them out. The only accurate method of making such a diagnosis is by x-ray, as the symptomatology and the physical findings of these cases are very misleading and very meager. The diagnosis by x-ray is usually based on the finding of air in the bile ducts, due to cholecysto-enteric fistulae. Sometimes filling of the bile ducts with barium will occur when barium is given by mouth to determine the cause of partial obstruction; however, this sometimes occurs normally with a large patent ampulla of Vater, which allows the barium to go up into the ducts, and unless the fistula is definitely seen, this cannot be relied upon too strongly. Very rarely, pathogenic organisms within the bile ducts and gall bladder will produce air in the bile ducts, but this is so rare that I believe that finding of air outlining the bile ducts is very diagnostic of a cholecysto-enteric fistula. At times an opaque stone may be seen in the small bowel with distension proximal to it. However, as most of these obstructions are of partial nature, the finding of air proximal to the stone is rather unusual. The patient with a known large radiopaque gallstone, whose calculus is not to be seen in the gall-bladder area at the time of onset of symptoms of upper intestinal obstruction, very likely has passed the calculus to the small intestine. At times during a barium enema, the barium will flow into the terminal ileum and definitely outline the stone. Recently, thorium chloride in very dilute solutions has been given by mouth, and in three or four hours it may definitely outline the gallstone in the bowel. Apparently, this does not harm and is not contraindicated, as is barium by mouth, in cases of bowel obstruction. As early diagnosis is imperative for the proper treatment of this condition in these patients with gallstone ileus, it is imperative that first of all the condition be suspected, and secondly, that it be considered in every case in an elderly individual with a history of partial or complete bowel obstruction.

Treatment

The treatment of a gallstone ileus is always surgical. The Wangensteen and Miller Abbott tube, used therapeutically, is definitely contraindicated, except as an adjunct to surgical treatment. In view of the fact that the high mortality is due to inability to make an accurate early diagnosis, and to procrastination on the part of the physician as well as the patient, it is imperative that surgery be instituted as early as possible in these cases. One is justified in some preoperative preparation of the patient, depending entirely upon the patient's condition, but procrastination beyond a few hours is definitely shown in a high mortality rate.

There are three surgical procedures which are followed:

1. One may attempt to milk the stone into the cecum where it will pass by the rectum, which can be done in some instances if the terminal ileum distal to the stone is massaged and dilated as much as possible. Kapel,[1] of Copenhagen, had two such cases and was able to pass the stone into the cecum without opening the small bowel, by meticulously massaging the terminal ileum until it dilated sufficiently for the stone to be pushed into the cecum. He recommends, however, if the stone is not passed by rectum within four days, that it be removed digitally.

2. The procedure most commonly employed is to do an open enterostomy after the stone is moved proximally until normal bowel can be opened over the stone. The bowel is opened with a longitudenal incision, and closed transversally to prevent constriction of the lumen. An enterostomy approximal to the site of operation is sometimes performed.

3. Should the bowel be gangrenous, requiring a resection of that portion of the ileum, this is done and continuity established by a side-to-side anastamosis, as this is considered the much safer type, with or without an enterostomy proximal to the site of anastamosis. If the condition of the patient is critical enough to warrant it, a Mickulitz exteriorization should be done as a life-saving procedure. Before closing the abdomen, the proximal portion of the bowel should be checked for any other stones that may be present, as multiple stones in the intestinal tract are not at all unusual, and, if found, they should be removed. The gall-bladder area should be inspected and the fistula tract examined to see what

the condition of the gall bladder is, and whether or not other stones are present in the gall bladder. As most of these patients are in very poor condition, it is unwise to attack the fistula or the gall bladder at the time of the relief of the obstruction. If an acute cholecystitis exists, a drain should be placed near the gall bladder, so that if a rupture occurs, the abscess can drain outside. As a large percentage of these cases are due to single cholesterol stones, and, therefore, no other stones remain in the gall bladder, the feasibility of taking down the cholecysto-enteric fistula is not indicated and not justifiable, as most of them close spontaneously anyway; however, if multiple facetted stones are present in the gall bladder, a cholecystectomy should be very seriously considered, and done later, preferably before the patient leaves the hospital.

In conclusion, the 40 to 50 per cent mortality in gallstone ileus is due definitely to indefinite symptoms, to procrastination on the part of the patient as well as the doctor, and to the doctor's failure to make an early diagnosis of the condition as it exists. Undoubtedly, the risk involved with the age and condition of the patient also is a very definite factor in this high mortality.

The only thing that can be done in a preventive way is that every individual in whom gallstones have been diagnosed should be definitely advised to have a cholecystectomy done, before reaching the fifth and sixth decades of life, to prevent this and other highly fatal complications from occurring.

DR. O. L. MCHAFFIE: These cases of gallstone ileus or intestinal obstruction due to the presence of gallstones in the small bowel are of rather infrequent occurrence, to the extent that many surgeons will not have the opportunity of seeing them. However, after having seen a few cases, the surgeon will recognize a rather definite pattern of signs and symptoms. The important features to be remembered are (1) The patients are usually past fifty years of age and have had gallstones over a long period of time, with or without recurrent attacks of cholecystitis and cholelithiasis. (2) There is usually an attack of acute cholecystitis with cholelithiasis during the period that the stone is sloughing through the fistula between the gall bladder and bowel. (3) After the gallstone has sloughed through the bowel, the patient has an interval of relief. The gall bladder drains, and the surgeon is misled into the belief that he is dealing with an acute cholecystitis which is subsiding. Most surgeons prefer to treat these acutely inflamed gall bladders conservatively, and for this reason they are lulled into a false sense of security during this quiet interval, during which time the patient is insidiously developing intestinal obstruction. As in all cases of intestinal obstruction, it is this delay, while symptoms are masked, which leads to error on the part of the surgeon, and to disaster. It is this deceptive quiescent period in these cases which is important and should remind all surgeons, in dealing with a case of acute cholecystitis and cholelithiasis, of the presence of a possible fistula between the gall bladder and bowel with the presence of gallstone ileus.

Conclusions

We have presented the difficult diagnostic case study of a sixty-three-year-old woman who suddenly began vomiting and continued to do so until her death three weeks later. She had a moderate leukocytosis and fever, x-ray evidence of small intestinal obstruction, and a past history of gallstone colic. At the necropsy a large gall-bladder calculus was found blocking the lower ileum. There was a perforation of the ileum proximal to the calculus and an acute generalized peritonitis.

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HALF OF PERSONS EXAMINED NEED MEDICAL ATTENTION

More than half of the 419 persons, 219 men and 200 women, who have been examined in the University of Minnesota's new cancer detection center during the first three months of its operation were found to have abnormalities calling for medical attention, Dr. David State, director of the center, reported June 9.

Referred to their personal physicians for treatment after examination at the center were 216 persons, some of whom, according to Dr. State, were suffering from two or even three different conditions requiring medical service.

In examining the 419 men and women who visited the center during March, April and May, University medical specialists discovered nine definite cases of cancer, twenty-seven "suspicious" tumors requiring further diagnosis, ninety-five precancerous lesions or sores, fifty-one benign tumors and eighty-eight nontumorous conditions, such as high blood pressure, requiring immediate attention by a physician.

Doctors assigned to the detection center found that 203 of the 419 persons examined were in good health and not in need of treatment. However, these currently well patrons were advised to return to the center every six months in order to assure themselves that they are still free of cancerous or precancerous conditions.

More than 8,000 applications have been received for admission to the center, and at the present rate at which the center is able to operate, it will require several years to examine all applicants. Anyone who has made an appointment date and who cannot report on the day set is asked to notify the center at least four or five days before the appointed day so that a replacement can be made.

The center is open to men and women of Minnesota in the age bracket in which cancer occurs most frequently, forty-five and over, who are currently without symptoms of cancer. Each person examined is asked to pay a $5 registration fee, but if the patient is unable to meet the charge, he is asked to pay as much of the fee as he can.

Case Report

COR BILOCULARE, TRANSPOSITION OF GREAT ARTERIES, PULMONARY STENOSIS, SITUS INVERSUS, ET CETERA, IN AN ADULT

ROBERT L. NELSON, M.D., and ARTHUR H. WELLS, M.D.
Duluth, Minnesota

IT is calculated that there are approximately 3,000 infants with surgically correctable congenital cardiac defects born every year in the United States. This number, plus a great back-log of children who have not had surgical care, emphasizes the importance of greater interest and knowledge in this special field on the part of the medical profession. Possibly 95 per cent of the surgically treated congenital cardiac anomalies occur as one of three anomalies: patent ductus arteriosus, pulmonary stenosis, and coarctation of the aorta.

Cor biloculare is indeed a rare anomaly,[13] the victims of which seldom survive infancy. Thus far, cardiac surgery appears contraindicated. The frequency of dextrocardia among the patients with these very serious cardiac anomalies is a repeated observation. A confusion of somatic and visceral dissociation in situs inversus is frequent. The variety of the associated anomalies of the heart and its vessels in cases of cor biloculare appears to be almost endless. We wish to add one more case of cor biloculare in an adult to the scanty literature[1-12] on this subject.

Case Report

M. T. was born a "blue baby" in September, 1919, and died on December 4, 1946, at the age of twenty-seven years and three months. On December 6, 1929, one of us (R.L.N.) examined him and made the following notes:

"This ten-year-old boy has been cyanotic all his life. He is of light complexion, but his skin varies from a dusky mottled color at rest to deeply cyanotic on slight exertion. The mucous membranes and the ear lobes remain dusky throughout the daily one-hour periods of bed rest.

"The heart is of the right mid-line type with a diffuse apex beat at the right sternal margin. There is a rough systolic murmur heard over the entire precordium, maximum over the lower sternal area. A distant rushing systolic sound is heard over the base of the heart and is not transmitted along the great vessels of the arch of the aorta. No thrills are palpable. Fluoroscopically, the heart is globular in shape and lies in the right mid chest (Fig. 1). The chambers are not clearly identified. Bronchovascular markings are relatively prominent. An electrocardiogram (Fig. 2) shows inverted P waves in all leads, a right axis trend with Q waves prominent in I and II and small in III. T waves are inverted in I and upright in II and III.

"Diagnosis.—(1) Congenital dextrocardia with complete transposition of the viscera; (2) congenital pulmonary stenosis; (3) congenital interventricular septum defect."

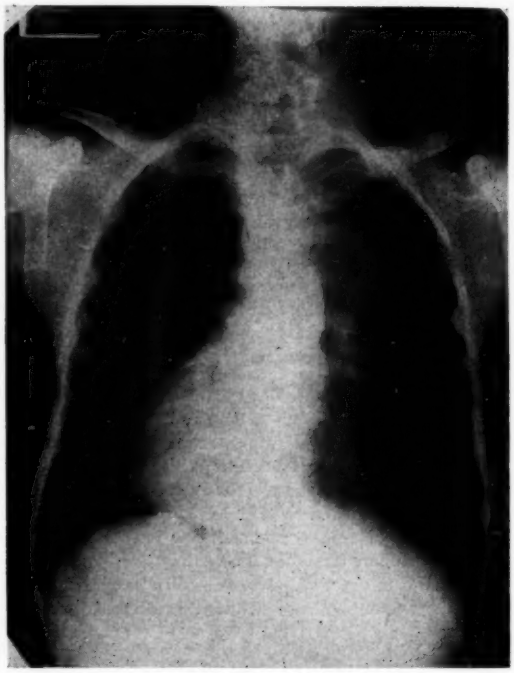

Fig. 1. Thoracic roentgenogram, revealing dextroposition and globular shape of the heart.

During his school years he was allowed all activities which he could tolerate, maintained a good scholastic standing and received special training in art.

When next examined on June 25, 1946, he complained of shortness of breath and painful feet. His feet had been sore since 1939 and empirin compound had ceased to afford relief from pain on walking. Shortness of breath had steadily increased during the past year, causing him to quit a defense plant job at Bridgeport, Connecticut, and return home. He got a job as a commercial artist in a large wholesale house and performed his duties in a satisfactory manner until October 22, 1946, when he developed severe painful edema of both lower extremities.

Examination showed a fairly well-developed and well-proportioned white male who appeared to be about twenty-one years of age (actual age, twenty-six). His ear lobes and all mucous membranes were cyanotic and

From the Departments of Electrocardiography and Pathology, St. Luke's Hospital, Duluth, Minnesota.

there was marked clubbing of the fingers and toes. His height was 68.5 inches (174.5 cm.) and his weight was 128 pounds (58 kg.). The retinal veins were large and deeply purple. The pupils were slightly dilated but reacted normally to light and accommodation. Aside from moderate postnasal discharge and cyanosis, there was nothing unusual about the rest of the head and neck.

The thorax was rather thin and long. Movement was free and equal, and the lungs were clear. Mediastinal dullness extended 3 cm. to the left and 9 cm. to the right of the midsternal line. The apex beat was diffusely palpable about the fifth right intercostal space. There was a loud, harsh systolic murmur maximum at the second left intercostal space, widely transmitted down to the apex and up to the suprasternal notch and posterior chest, but not along the great vessels of the neck. A coarse thrill was palpable from the first to fourth ribs with maximum intensity at the third rib level at the left sternal margin. Blood pressure was 120/85 in the right arm and 120/90 in the left.

The liver edge was palpable 2 cm. below the left costal margin. The external genitalia were well developed, and the glans penis was moderately cyanotic. There was moderate cyanosis of the lower third of the lower extremities and tenderness over the metatarsal heads of both feet. Reflexes were all physiological.

The urine showed a trace of albumen. Hemoglobin was 19.5 grams. The blood Wassermann test was negative. The electrocardiographic pattern (Fig. 2) was basically unchanged from 1929. In the CF leads, T was inverted in 1, 2, 3 and 4 and slightly upright in 5 and 6. Reversing the right and left arm electrodes and placing the leg electrode on the right leg failed to give a less abnormal pattern, as did reversal of the positions of the chest leads. The diagnostic impression was unchanged from that of 1929 except for the addition of polycythemia. The absence of right axis deviation in the electrocardiograms, however, was confusing. It suggested the equivalent of a right ventricular hypertrophy (left sided because of the dextrocardia) but this could not be corroborated clinically.

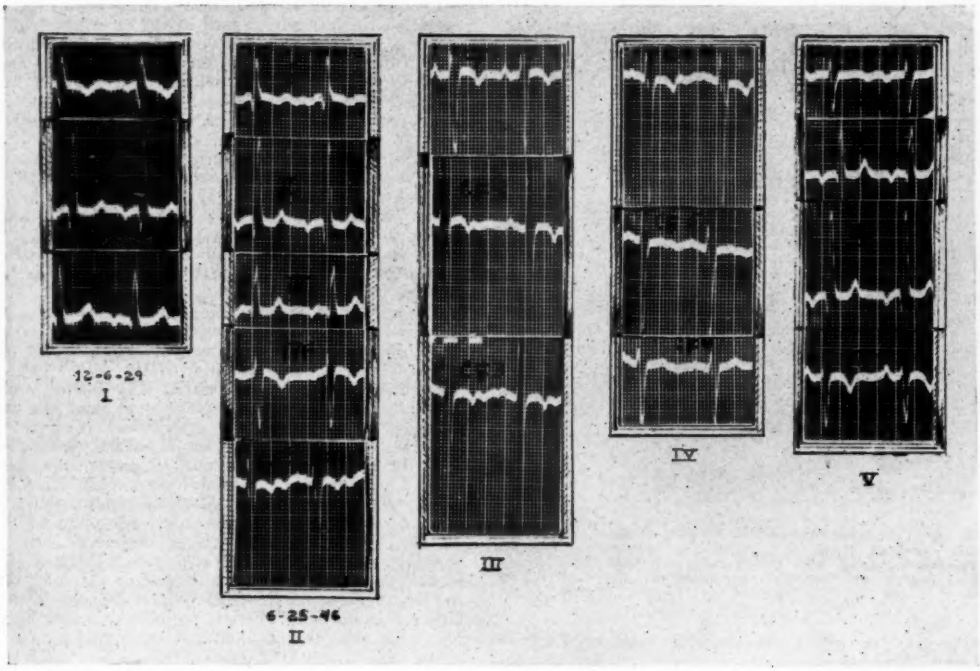

Fig. 2. Electrocardiograms as described in the text.

Clinical Course.—The exertional dyspnea was controlled by pre-exertional ephedrine to the degree that he could walk several blocks instead of half a block without stopping to catch his breath. Digitalis alone was ineffective. More potent analgesics such as codeine and demerol relieved his foot pain for insignificant periods of time, so dehydration with ammonium chloride was tried. This relieved the foot pain but caused diffuse headache, nausea and vomiting, so it had to be discontinued. Mercurial diuretics produced the same effect. He had found that drinking beer also produced headache in from one to six hours and that this persisted in association with nausea and vomiting for thirty-six to forty-eight hours. The headache was not responsive to ergotamine tartrate or histamine but was abolished by inhalation of 100 per cent oxygen.

On October 18, 1946, he complained of severe pain in both ankles and feet. From the lower level of the calf to the level of the malleoli on both legs, the skin was a brilliant red, the area was edematous, and expansile pulsation was present. This was a severe bilateral erythromelalgia of unusual location. A request for study at the University of Minnesota Hospital was granted on November 1, 1946, by which time the erythromelalgia had subsided to a dusky hue and was not pulsatingly painful. It was deemed advisable to make such additional studies as were necessary to determine whether any surgical corrections could be employed. Also, means were to be sought for controlling the increasingly frequent and severe headaches.

Dr. Cecil J. Watson, of the University of Minnesota,

supplied us with a summary of the studies made at the University Hospital. The history and physical findings were essentially as previously outlined.

Examination of the blood revealed 19.3 grams of hemoglobin per 100 cubic centimeters and 8.5 million

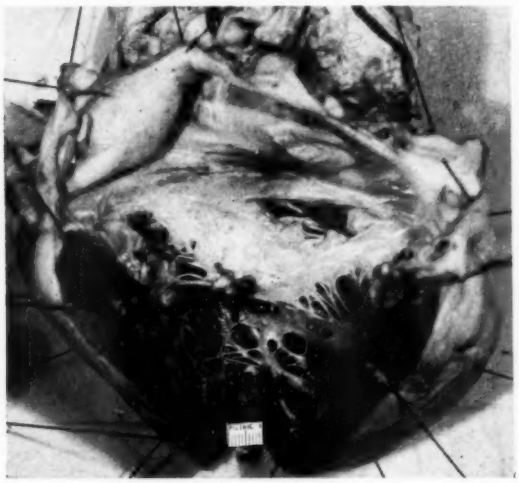

Fig. 3. Cor biloculare opened from the dorsal aspect, revealing common atrial and ventricular cavities, a bicuspid atrioventricular valve with an anomalus valve-like defect in the anterior leaflet and bacterial vegetations on the same leaflet.

erythrocytes per cubic millimeter. The hematocrit was 76 per cent. The coagulation time was 9 minutes and the bleeding time was 3 minutes. The total plasma protein was 7.7 grams per cent. The venous pressure was 9 cm. of sodium citrate. The arm to tongue circulation time was 21 seconds and that of the arm to lung was 8.5 seconds. Repeated attempts to perform blood volume determination were made, but were unsuccessful because of the high hematocrit and the resulting hemolysis of the blood.

Dr. Leo Rigler found complete situs inversus and some enlargement of the heart, apparently chiefly in the right ventricle. The pulmonary arteries were clearly visualized and the one on the right side was in normal position but rounded out in an unusual fashion. There appeared to be a dilated superior vena cava. Vascularization of the lungs was good. Dr. Helen Tausig of Baltimore suspected that there might be a single ventricle and advised deferment of operation until further knowledge of operative procedures on this type of lesion was obtained.

Five weeks after returning home, he failed to awaken in the morning. The heart tones were barely audible, and the pulse was not palpable. The heart rhythm was grossly irregular. The rate progressively slowed, and the patient expired without regaining consciousness.

Autopsy

The necropsy revealed the following significant abnormalities: situs inversus subtotalis, cor biloculare, transposition of the aorta and pulmonary artery, pulmonary stenosis, absence of ductus arteriosus, a streptococcic endocarditis on the atrioventricular valve leaflet, dilatation of cardiac cavities, chronic passive congestion of lungs, liver and spleen, and other lesser anomalies to be described.

The apex of the heart pointed to the right and its right border was 7 cm. to the right of the midsternal line while the left border was 4 cm. to the left. The pericardial sac had smooth, shiny, noninjected surfaces free from adhesions and contained only a few cubic centimeters of watery fluid. The heart weighed 410 grams. There were two cavities (Fig. 3). No trace of an interauricular or interventricular septum could be made out, except that there was a rudimentary, pouchlike space on the left lateral wall of the enlarged ventricular cavity. This rudimentary ventricle would barely admit the tip of the index finger and measured about 3 by 2.5 by 1.5 cm. The atrioventricular valves were two in number, each of approximately equal size. The anterior leaflet seen in Figure 3 had a rudimentary leaflet near its base with fairly normal appearing chordae tendinae distributed about its margins, so that this valve within a valve appeared to be competent. It measured 4 cm. in its greatest dimension. The chordae tendinae passed down into the rudimentary pouchlike ventricle described above and attached themselves to its inner surface. There were small granular, somewhat friable, pinkish gray vegetations at two sites on the atrioventricular leaflets as seen in Figure 3.

The aorta had its origin in almost the exact site of the usual origin of the pulmonary artery, i.e., anterior and slightly to the right, while the pulmonary artery had its origin posterior and slightly to the left. The aortic valve leaflets were not unusual. The aortic wall was distinctly thinner than average and had no atherosclerosis. The pulmonary artery leaflets were fused in such a fashion as to leave a slitlike opening which could be rounded out to about 0.8 centimeters in diameter. The margins of the slitlike opening were roughened, irregular, and had bits of calcium deposits which could be easily visualized on an x-ray plate of the removed heart. The first inch of the pulmonary artery averaged about half normal size, with a gradual increase in its diameter. This gradual dilatation extended up into the right pulmonary artery which became somewhat larger than normal. The left pulmonary artery branched off rather sharply and almost at right angles as a vessel about one-third of its normal size. The walls of all pulmonary arteries were extremely thin, measuring less than 1 mm. in thickness, and had the consistency of gutta percha. There were four principal branches off the arch of the aorta instead of three, there being a right subclavian and right common carotid instead of the usual right innominate artery. There was a ringlike marking with slight constriction of the lumen at a point just beyond the left subclavian artery at the site of the usual coarctation. No ductus arteriosus whatever could be found, not even a rudimentary band. The superior vena cava and inferior vena cava opened into the common atrial cavity on its left side, while the four small pulmonary veins, each averaging about 1 centimeter in diameter, opened separately to the right of the midline into the atrial cavity.

Evidence of confusion of development of the somatic and visceral elements, in this patient with almost complete situs inversus, were noted, in that the second portion of the duodenum was in its usual site to the right of the vertebral column and the common duct passed down to it in the usual manner. The aorta passed down the left side of the vertebral column, and the esophagus was to the right. Also, the attachment of the mesentery of the small intestine to the retroperitoneum was in its usual diagonal down to the right lower quadrant. The pancreas formed an irregularly rounded mass without a body or tail, measuring about 6 cm. in diameter. The spleen weighed 560 grams and was almost completely divided into two fairly normal shaped spleens. The microscopic examination revealed a most remarkable dilatation and congestion of endothelial-lined sinusoids, thin-walled arteries and veins throughout the myocardium. There was moderate evidence of chronic passive congestion in the lungs, liver, spleen and kidneys. The body had been embalmed so that

(Continued on Page 678)

History of Medicine In Minnesota

A HISTORY OF MEDICINE IN SCOTT AND CARVER COUNTIES

Biographical Dictionary

(Continued from May issue.)

Carl Augustus Entrup was born June 16, 1857, in Shakopee. He received his literary education at the public school and at the Minnesota Valley Academy, and read medicine in connection with his other studies, under Dr. M. H. Manson. After the death of his father, he taught school one year and in 1877 went to the University of Michigan, where he spent three years as a medical student. After receiving his diploma, in 1880, he returned to Shakopee and there practiced medicine until the time of his death in 1893. He was a very skillful general surgeon who later chose to specialize in eye and ear diseases. In 1891, when a boy at Jordan suffered lacerations of the face in an explosion, Dr. Entrup was called upon by the physician in attendance, because he was the only man in Scott County or adjoining counties capable of performing the surgical operation required. He was a member of the Scott County Medical Society, and of the Minnesota State Medical Society.

Dr. Entrup died in Shakopee in 1893 of pneumonia.

J. C. Erickson came to Jordan in 1861. He was a medical graduate and practiced medicine in addition to running a large drugstore. He remained for thirteen years and probably longer.

C. J. Fisher located at New Prague in 1894.

H. P. Fischer, a graduate of the Detroit College of Medicine, settled in Shakopee in April, 1894. His card read:

Dr. H. P. Fischer, M.D.
Physician & Surgeon
Office over Duetch & Zettel's Drug Store
Speaks German fluently

He soon became known as a good surgeon, and in a manner he filled the place that Dr. Entrup's death had left empty. In June, 1895, he married Philomena Huck of Berlin, Ontario, his former home. His popularity brought him many patients in Shakopee and the small towns in that part of the county. During the period 1897-1900 he served as county physician, and in 1897 and 1899 held the position of city health officer for Shakopee. In November, 1899, he recommended to the board of county commissioners that an operating room be fitted out at the county poor house, as there was no such provision in the county and it was needed sadly. On motion, he was authorized to purchase the necessary furnishings.

Doctor Fischer died January 24, 1940, as a result of an automobile accident in Minneapolis.

Charles F. Forssman was born in Sweden, July 4, 1836, and in that country studied medicine and received his diploma. He came to America and to Carver County in 1869 and practiced until his death in Hancock Township in May, 1887.

J. H. Frank, an eclectic practitioner, was graduated from the Minnesota College Hospital in 1882 and from the American Medical College, St. Louis, in 1883. He followed his profession in Chaska from about 1886 to 1896. In February, 1891, he married Mrs. Lillian Marsland of Argyle. About 1897 he moved to Anoka, where he remained a number of years.

D. S. French was a physician of Shakopee in the 1860's. He died there in May, 1867, at the age of fifty-five years.

Louis Gothelf was an early practitioner in Waconia, where he settled about 1864. He practiced medicine until about 1868, when he opened a general store. His business failed in 1872; he may have left the county at that time. He was an active Democrat, and in 1867 he served on the board of county commissioners.

S. D. Grant located in Watertown, Carver County, about 1869. He purchased a drugstore there in 1872; his advertising card read as follows:

Dr. S. D. Grant
Physician & Surgeon
And Dealer in
Drugs and Medicines
Paints, Oils, Glass, Putty
Books & Stationery
Everything belonging to a first class stock
Physicians'
Prescriptions carefully compounded
Also a choice stock of
Family Groceries and
Provisions
Watertown Minnesota

During the years 1873 and 1874 he acted as deputy county physician. In October, 1874, he was killed by a boiler explosion at Watertown.

William A. Griffin was one of the pioneer doctors of the Minnesota Valley and the first resident physician in the county of Carver. He was born in New Hampshire and was a graduate of Dartmouth College. Probably he was not trained in any medical school, as he practiced under the Exemption Law of 1883. In 1857 he located at Carver, and remained there until his death in 1899. During these years he held many public offices. He became the first justice of the peace of Carver and was the village president and treasurer. He was postmaster for the year 1865-1866 and assessor in 1870. During the Civil War he served as examining physician to the Carver County Volunteers. He was elected county physician in 1872, and late in life he was appointed health officer of Carver. He owned a drugstore at Carver and for many years was a prominent businessman in the village. His death came from heart failure at the age of seventy-five years. He was at that time the oldest practicing physician in the Minnesota valley east of St. Peter.

Charles T. Grivelly, the son of Dr. James Grivelly (of Young America, Carver County, and later of New Market, Scott County), was a non-graduate, licensed in Minnesota in 1896. In 1892 he went to Switzerland to study medicine. On his return to Carver County he settled in Waconia, but in 1899 he returned to Young America, as the field had been vacated by his father. He was a popular young physician.

James Grivelli (known later as Grivelly) was graduated from the medical department of Iowa State University in 1887; and, having been licensed to practice in Minnesota in April of the same year (certificate No. 1375), he came from Arlington and settled in Young America, Carver County, in June. In the fall of 1888 he departed on a journey to Switzerland, his fatherland. The following March he returned to Young America, where he practiced until 1899. His large practice extended to Mayer, Norwood, Bongaard, Schnappsburg, Waconia, Heyd's Lake and Brownlin. Since he spoke German, he was popular among the German residents, as well as among the English speaking settlers. In 1893 he was elected to the pension examining board at Glencoe.

Dr. Haas was an early physician at Chaska about 1874.

John Habenicht, a graduate of the University of Prague, Bohemia, in 1864, came to Scott County, or thereabouts, soon afterward. After practicing two years in Jordan, in 1876 and 1877, he moved in 1878 to New Prague. After three years he returned to Jordan, where he was welcomed back by the German people of that town. His stay terminated after nine months, however, when he went into partnership with Dr. Landenberger of New Prague. Evidently patients were scarce, for in March, 1882, he left; and for four years he "played in various theaters in some of the large cities."

In February, 1886, Dr. Habenicht returned to practice in New Prague, and there with Dr. Landenberger opened a hospital for the treatment of chronic diseases. Their card read:

> Dr. J. Habanich [*sic*] Dr. J. Landenberger
> Habanich & Landenberger
> Physicians & Surgeons
> Are now ready to treat all kinds of Chronic diseases, male or female. The treatment will be at the New Prague Hospital, owned by the Doctors. All communications will be answered free of charge.

But even this project was not successful, and the doctor started out again to find a more fertile field. He moved to Glencoe in October, 1887, then to Waconia, then returned again to New Prague in December of the same year. He was licensed in Minnesota under the medical practice act of that year, and he held Certificate No. 1475 (R). In 1894 he was in Owatonna.

Harry A. Halgren practiced for many years in Watertown, beginning in the late nineties, and was well known in Hollywood and St. Bonifacius also. A non-graduate, he was licensed in Minnesota in 1896. In 1900 he was elected coroner of Carver County.

John B. Hall, a homeopathic physician, opened an office for practice in Shakopee in May, 1867. Previously he had been the proprietor of Hall's Homeopathic Pharmacy at Cleveland, Ohio. Not long after his arrival he suffered the loss of much property, including his office fittings, household furniture and library, in a fire.

Everett C. Hartley was a homeopathic physician who settled in Carver in January, 1886. He had been graduated from the Chicago Medical College in 1879, and he held Minnesota License No. 387 (R), issued on November 24, 1883. In the year following his arrival in Carver, he married Bertha Strache of that town. He was a very promising young physician and his practice grew rapidly. He drove a spanking team of horses, and was called to nearly every accident in that part of the county, including Chanhassen, East Union and Jordan, Scott County. He was often mentioned as a first-class man professionally, and he held many civic offices. In the years 1889 through 1891 he served on the Carver board of health, and in the period 1896 to 1900 was "the best coroner this county ever had." In 1897 he became a member of the pension examining board at Shakopee and continued in that office for several years. He prospered financially to the extent of building a new home, keeping a fine stable, taking frequent trips to the Twin Cities and to the Fair at Chicago, and going on annual hunting trips in Dakota. In December, 1898, he took a month off to do postgraduate work in Chicago, leaving his friend Dr. C. W. Malchow of Shakopee to attend his patients in both Chaska and Carver. After his return, Dr. Hartley practiced in Carver until his death in 1928.

Dr. Hoeffken practiced at Schnappsburg in 1893.

George B. Holmes practiced in Carver in 1870.

S. M. Janes, a homeopathic physician and a graduate of the Hahnemann Medical College of San Francisco in 1888, was licensed in Minnesota in 1892. He settled in Jordan about 1893. He was intensely interested in both politics and medicine. In 1895 he spent a fortnight visiting Twin City hospitals and a month in New York City looking up the latest in medicine and surgery. To quote from the *Scott County Argus,* an issue of 1895: "The doctor is not one of those whose contentment has robbed him of his ambition and his recent expensive trip shows that he is bound to have the best in his profession and keep abreast of the times." In 1898 he was appointed one of the county physicians and served in that capacity for several years. About 1900 he established a private hospital in Jordan.

David A. Kirk was graduated from the Detroit Medical College in 1888 and was licensed in Minnesota in 1889. He practiced in Jordan, Scott County, about 1890 or 1891. Later he was in Le Sueur (see the medical history of Le Sueur County).

John Knotz, a graduate of Hamline University in 1897, came to Cologne from Minneapolis in April, 1898. He spoke both English and German and was an old practitioner. Cologne had never had a physician previous to that time, and the village was anxious to keep him. His practice extended to Benton and Anoka, and he was well patronized. He could not make up his mind

to stay, and moved to Story City, Iowa, for a few months but returned again to Cologne where he remained for several years.

J. C. Koch located in Norwood about 1894, having previously practiced in Waconia. After residing for five years in Norwood, he died at a Minneapolis hospital from complications following the removal of his appendix.

C. H. Kohler, son of S. B. Kohler of Watertown, Carver County, and brother of Dr. F. G. Kohler of Forest Lake, practiced in Shakopee about 1890, then moved to Glencoe and later to Minneapolis.

David La Framboise was an Indian doctor, one of the local Sioux, who lived at Shakopee during the nineties and was also well known at Hastings.

John Landenberger, Jr., established himself in New Prague about 1871. He was well supported by the local Democrats in politics, and for several years he served as coroner of Le Sueur County. New Prague is situated on the county line, and consequently Dr. Landenberger's practice extended into both counties. In 1886 he associated himself with Dr. John Habenicht and the two physicians opened a hospital for the treatment of chronic diseases; as noted earlier, the project was of short duration. Dr. Landenberger, who practiced under the Exemption Law of 1883, remained in New Prague for many years.

John Landenberger, Sr., settled in Helena, Scott County, in 1854 and lived there until 1875, when he moved to Portland, Oregon. He practiced in Portland for two years and was buried there when he died in 1877 at the age of fifty-nine.

Benedict Lehmann came to Watertown, Carver County, in 1856. In the fall of that year he laid out the village of Helvetia on the Crow River. How long he remained in Carver County is not known.

Dr. Lening, a graduate of a German University, settled in Blakely Township, Scott County. He died there in 1858.

E. H. Lewis came from Washington, D. C., and settled in Carver in August, 1870. Many physicians had come for a brief stay at Carver, then passed on in search of a better field. Dr. Lewis came better recommended than most (he had had eight years of experience), and Carver was then in need of a physician who could handle the sudden onslaught of epidemics that came in that year. Soon after his arrival Dr. Lewis was busy day and night. He was, without doubt, the most popular man in town, and his social position as well as his professional standing was soon assured. His practice extended throughout the county and into Scott, Sibley, and McLeod Counties. On several occasions he was elected to public offices: in 1870, as deputy county physician and in 1871 as examining surgeon for Carver County. In the latter year he served also as Commander of Baxter Post No. 25 of the Grand Army of the Republic, and as president of the newly organized Carver Literary Society. In 1872 he opened an office in Chaska and commuted every day. In the following spring he took his younger brother, Dr. Frank E. Lewis, into partnership in the Chaska office, where the latter remained for a short time.

Dr. E. H. Lewis died at Carver in July, 1884. At the time of his death, he was a leading member of the profession in the Minnesota Valley.

Frank E. Lewis, as noted above, was a brother of Dr. E. H. Lewis of Carver. He was a graduate of Rush Medical College, and practiced in Carver and Waconia during the first half of the year 1872. The following spring, he practiced at Chaska in partnership with his brother. In June, 1873, he moved to Alexandria, Douglas County, where he formed a partnership with Dr. Godfrey Vivian of that town.

Charles Lord was born in Westmorland, New Hampshire, on July 22, 1817. At the age of seventeen years he went to Augusta, Georgia, where he spent three years in the study of medicine. He married in 1839, and five years later entered the office of Dr. Woodhouse in New Hampshire, with whom he stayed three years as a student. In 1847 Dr. Lord began the practice of medicine in his native town, and continued there until 1849, when through the influence of relatives of his wife he moved to Pittsburgh and there entered into practice with Dr. Oldshoe. When his health failed him, he sought the climate of Minnesota and arrived in Carver County in the spring of 1854. He settled in the township of Chanhassen. In the fall of the same year he moved to a farm in Eagle Creek Township, two miles east of Shakopee. His claim covered 160 acres, half of which he sold, and the remaining part of which he farmed until 1864. Then, having regained his health, he settled in Shakopee and actively engaged in the practice of his profession.

Dr. Lord had a large clientele throughout Scott County. For a time, about 1867, he had his office at Jordan, but in a few months returned to Shakopee. He held many public offices, and was one of the first county commissioners. For years he was an active member of the town board of Eagle Creek and also a member of the school board for that district. After moving to Shakopee, Dr. Lord became a member of the board of management of School District No. 2, which position he held at the time of his death. He was chosen to represent the Third Ward of the city as alderman at the first election under the Shakopee city organization (1870). He held that position for six years, at the end of which he declined re-election because the work entailed frequent absence in the discharge of professional duties. He was a prominent member of the Masonic Lodge, and was active in the Episcopal Church. He continued to practice medicine until his death, from Bright's disease, in May, 1881.

Dr. Lord was spoken of, by a contemporary, as a "conscientious and painstaking physician."

John A. Macdonald, born in Scotland in 1809, came to the Minnesota River valley, settling in the vicinity of Chaska about 1859, and was at that time known as a physician. He is recorded in the *Official Register of Physicians in Minnesota, 1883-90* as having graduated in 1867 from the College of Physicians and Surgeons at Keokuk, Iowa. In 1864 there was a severe epidemic of smallpox in the county, and Dr. Macdonald did a great deal to alleviate distress among those afflicted. In April he wrote an article for the *Chaska Valley Herald* in which he called the people's attention to sanitary and preventive measures. In October, 1865, he left Chaska to serve as First Assistant Surgeon of the Second Min-

nesota Cavalry. Upon being relieved from duty, he returned to practice in Chaska; his card published in January, 1866, read as follows:

> Dr. John A. Macdonald
> Physician and Surgeon
> Late 1st Asst. Surg. 2nd Minn. Volts. Cav'y.
> Respectfully intimates to the inhabitants of Carver County that he has again opened an office in Chaska. Where he will attend as before to every kind of business connected with his profession. Surgical operations scientifically performed. Chronic diseases successfully treated and all other calls promptly attended to.

In October, 1866, he moved to Saint Paul, leaving Chaska and the nearby country much in need of a physician, as he had been the only one there. It is possible that he then took a course in medicine at Keokuk, Iowa. Later he returned to Chaska, but left to serve in the army again, as contract surgeon, in 1884. In March, 1886, he located at San Diego, California, but again returned to Chaska. Two years later he moved to Chicago, giving up his practice on account of poor health, but again he returned, and remained in Chaska up to a month prior to his death, which occurred at a Minneapolis hospital on November 30, 1890. He was the father of the Honorable John L. Macdonald, who lived in Shakopee for several years.

William F. McCarthy, a graduate of the Saint Paul Medical College in 1880 and the University of Minnesota in 1889, came to New Prague from Minneapolis in the year 1890. After two or more years of practice there, he moved to Jordan, where he remained for many years. During the years 1894 through 1896 he served as county physician. He was active in relieving those afflicted during the severe epidemic of diphtheria in the period of 1896-1898, serving part of that time in his capacity as county physician. He served as health officer of Sand Creek during the year 1897 in the worst part of the epidemic. He also held the position of pension examining surgeon in 1894.

C. W. Malchow settled in Shakopee as a successor to Dr. A. A. Sabin after the latter's death. He came from Lester Prairie, Minnesota. At the time of his arrival (March, 1896) he was less than thirty years of age and unmarried. Almost immediately he became a part of the social life of the town. He made frequent visits to Minneapolis, as his parents and sisters lived there. Also he was an active member of the Alumni Association of the Medical Department of Hamline University, and served as president of the association for several years. In June, 1897, he gave up his practice in Shakopee for a year of clinical work in the hospitals at London, Paris, Berlin, Munich, Vienna, and New York. He went first to Guy's Hospital in London, then studied for a time under Koch, in Berlin. He returned to Shakopee in March, 1898, and was considered the leading physician there at the time. In that year and the next he held several civic offices, among them that of city health officer. Apropos of his professional ability, it is of interest to note that he received, in 1894, a gold medal awarded for the highest examination during 1893-1894 by the Minneapolis College of Physicians and Surgeons.

In May, 1900, Dr. Malchow sold his medical practice, office equipment, horses and vehicles and went to Europe again for a year's recreation and

study, intending to perfect his knowledge in a special line, that of diseases of the digestive organs. When he returned in December of that year, he established himself in Minneapolis and became professor of anatomy at the Minneapolis College of Physicians and Surgeons. A more dramatic chapter of his life came after 1900, when he wrote and published a book, *The Sexual Life*, too progressive for the first decade of the twentieth century, and was sentenced to the penitentiary.

J. Manning, a graduate of the Iowa College of Physicians and Surgeons, established himself in Cedar Lake, Scott County, in March, 1877, as a school-teacher. In the fall of 1877 there was a controversy between him and the county superintendent, and Manning was deprived of his certificate. In 1878 he practiced medicine at Hamilton, and in September of that year he ran for the office of superintendent of schools in Scott County, but lost. During 1879 and 1880 he continued the practice of medicine at Cedar Lake.

M. H. Manson came to Shakopee, Scott County, in October, 1875, succeeding Dr. L. S. Thompson. He was a native of Maine and made frequent visits there. In 1880 he held the position of United States pension surgeon for Scott County. Both Dr. and Mrs. Manson were well liked and active in the social circles of Shakopee. Dr. Manson became a member of the Shakopee post of the Grand Army of the Republic when it was organized in 1886, and he served as post surgeon that year. In 1887 he moved to Minneapolis.

N. H. Marshall, a graduate in medicine from the University of Minnesota in 1892, settled in Chaska, Scott County, about 1895. He was a prominent member of the profession and held several offices during the first years of his residence. In September, 1897, he received an appointment as pension examining surgeon at Shakopee and served as president of the board that year. In 1898 he served on the board of trustees of the Chaska Red Cross Aid Society, and in 1899 as physician of the Modern Woodmen of America, a fraternal organization then composed of many of the leading citizens. In October, 1898, when he expressed his intention of leaving Chaska for Park Rapids, he was induced to remain by the earnest requests of his many patients in the city and vicinity. In December of that year he was elected chairman of the board of health of Chaska. He remained in practice there until his death in 1930.

M. M. Mead came to Chaska to practice in September, 1871. He had formerly resided at Winona. After some years of practice he died in the Soldiers' home at Minnehaha.

Dr. Meek arrived in Young America, Carver County, about 1886. He gained an extensive practice in the town and nearby country. In 1887 he was made surgeon of the Major J. C. Becht Post, Grand Army of the Republic. In that year he moved to Glencoe.

R. S. Miles settled in Young America, Carver County, in December, 1872. He was a member of the Physio-Medical School. He met with a fair degree of success in the county and stayed there several years.

(To be continued in the July issue.)

President's Letter

NATIONAL HEALTH ASSEMBLY, 1948

The National Health Assembly held in Washington last month marked the second time in ten years that such a conference has been called. In retrospect, both conferences appear quite different. A dangerous undercurrent—the constant push for nationalized medicine—was present in both; but this second conference leaves the cry for compulsory health insurance somewhat muted. In its fight to preserve private practice, medicine has apparently dealt some telling blows, but it should be obvious to every thinking medical man that the constantly expanding efforts of the profession to provide more adequate and more equitable medical service to the general public will have to be promoted relentlessly and ever more unselfishly if the arguments of pro-nationalists are to be routed.

The first edition of the health assembly in 1938 was definitely a packed conference with physicians considerably outnumbered by social planners and others committed to support of federally administered health programs. Pressure from the American Medical Association on Federal Security Administrator Ewing, who called the 1948 assembly, resulted in a much fairer proportion of physicians among the groups represented. Out of 800 delegates to the recent conference, about 200 were doctors. Also represented were state health departments, social workers, labor, agriculture and various other organized groups.

National meetings of this kind lend themselves well to behind-the-scenes activities of federal bureaucrats. Organized medicine must, therefore, keep in closest touch with these developments. The Minnesota State Medical Association, just as many other state associations, sent representatives both to observe and to participate in this conference.

Called at the request of President Truman for the purpose of developing "feasible health goals for the next ten years," the National Health Assembly examined several national health problems. There were fourteen sections, each discussing a particular question. Worthy of note is the work of the section which discussed the nation's need for medical care. It was in this section that the largest number of delegates registered. It is interesting that in spite of so many diverse opinions held by those in this section, many areas of disagreement were apparently cleared.

The findings of each of the sections will be published in full at a later date from Mr. Ewing's office, but from the preliminary reports it is apparent that all sections took their work very seriously, and all approached their problems from the community level rather than from the national level. Of course, the fact that the full report of what took place at the Health Assembly is to be made by Mr. Ewing leaves the field wide open for him to present whatever viewpoint he desires. Delegates apparently, however, did recognize the fact that health problems cannot be solved by physicians and health authorities alone; only in a couple of instances was emphasis given to the need for federal assistance. Surprisingly, even in the medical care section voluntary health insurance took precedence over compulsory plans; and all groups represented in this section endorsed extension of voluntary prepayment programs.

Quincy Howe of the Columbia Network broadcast a summary of the conference in which he praised doctors who had attended for taking time to work with the National Health Assembly. He said that the fact they had shown themselves so co-operative, so understanding and so open-minded, seemed to him the most promising and important development of the whole meeting.

We of the medical profession must bear in mind that the people at this conference are the people with whom we must work in accomplishing health objectives. We have pledged ourselves to co-operate with responsible groups toward the realization of improved health for Americans and to support any *feasible* programs toward that end. We reaffirm that pledge now. Ours is the responsibility of offering constructive leadership in the health field where our experience and training have qualified us to speak.

A. E. Caudle

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

B.A.L. IN HEAVY METAL POISONING

ONE of the important discoveries from the medical standpoint made during World War II was that of B.A.L. (British Anti Lewisite) by English scientists. In 1909 Erhlich first stated that the toxic action of arsenic was due to its combination with sulfhydrl groups (SH) of the tissues. Many other investigators have ascribed that metallic compounds combine with these thial groups of the tissue and thus inactivate these constituents necessary for life and function. English scientists—Peters, Stocken and Thompson—working on this theory proposed by others discovered 2-3 dimercaptopropanol (B.A.L.) as an antidote for lewisite poisoning. They used B.A.L. in an inunction and showed that it protected the skin against arsenical vesicants, stopped systemic effects and increased urinary output of arsenic.

These scientists showed that B.A.L. (CH_2-SH-HC-SH-H_2-COH) produced its effect by using its sulfhydrl groups (SH) to compete with the tissue sulfhydrl groups for the poison. It not only prevented the toxic reaction but could reverse the reaction, the latter being of extreme importance in cases of poisoning. They further revealed that B.A.L. was a dithial containing two (SH) groups and as such had greater stability and greater affinity than monothial groups.

There are three of these mercaptans: (1) B.A.L., (2) B.A.L. glucoside and (3) thiosorbital. B.A.L. glucoside is not sufficiently available in its pure form. Thiosorbital has an advantage in that it is water soluble and can be given intravenously. B.A.L. itself is commonly used and is most effective in treatment.

B.A.L. is of great value in the treatment of bichloride of mercury poisoning. Longcope reports twenty-three patients taking doses ranging from .5 to 20 gms. of this substance with only one death. He reported the mortality rate at Johns Hopkins prior to advent of this drug as being 12.9 per cent and at present only 4.4 per cent. Eagle reports excellent results using B.A.L. in treating the complications of arsenic therapy. These complications included toxic encephalitis, agranulocytosis, aplastic anemia, jaundice, massive overdosing with oxophenarsine and arsenical fever. The most conclusive evidence of its efficiency was in toxic encephalitis and agranulocytosis. There is one very encouraging report of a case of optic neuritis due to tryparsamide successfully treated with B.A.L. and one case of lead poisoning has been reported in which treatment was successful. Three cases of tellurium poisoning were recently treated with complete recovery. Experimentally, B.A.L. is useful in treating poisoning in animals produced by antimony, bismuth, chromium and nickel, but has been reported as not being useful in the treatment of poisoning in animals by lead, thallium and selenium. Because of its ability to reduce methemaglobin to hemoglobin it should prove useful in treatment of poisoning due to anilin compounds such as acetanilid and phenacetin.

The recommended dosage of B.A.L. is from 2.5 mg. to 5 mg. per kilo of bodyweight given at four hour intervals. B.A.L. is prepared as a 10 per cent solution in peanut oil for intramuscular use. In bichloride of mercury poisoning 5 mg. per kilo is recommended for the initial dose followed by 2.5 mg. per kilo at two to four hour intervals for the next twelve hours; thereafter 2.5 mg. per kilo may be given b.i.d. until recovery occurs. The reactions from B.A.L. therapy included nausea, vomiting, headache, burning sensation in eyes and feeling of constriction in the chest. No serious reactions from B.A.L. have been reported. Adrenalin may be used in the treatment of any of the reactions.

THOMAS J. KENYON, M.D.

INDUSTRY AND THE OLDER AGE GROUP

WHATEVER the reasons may be, a man or woman who has reached the age of forty-five may well have the feeling that he or she is discriminated against when it comes to obtaining a job. Our laws relating to responsibilities of employers towards employes doubtless constitute one

reason for this discrimination. Probably more important is the feeling on the part of the employer, which is more a tradition rather than founded on fact, that youthful employes are more desirable than those in the group over forty-five.

A series of articles on the problems presented by our aging population, written by Dr. Howard A. Rusk, have been appearing in the *New York Times* and are most constructive in nature. He calls attention to the fact that although certain jobs requiring agility and strength are admittedly better filled by the youthful, there are certain positions requiring judgment, experience, and skill which are better filled by the older group. Experience and age, up to a certain point, are an advantage to judges, teachers, artists, architects, doctors, and others. With an ever-increasing larger percentage of the population constituting the older age group, the importance of society's furnishing adequate employment for this group becomes apparent. Dr. Rusk mentions some of the steps which have been taken to meet this situation. In New York, the Federation Employment Service, an affiliate of the Federation of Jewish Philanthropies, has recently made a campaign to secure employment for those over forty-five and to educate the public to the idea of the fitness of older people for employment. The response of employers all over the country is said to have been remarkable, and they have agreed to place orders for older workers. With the slogan "Experience, Loyalty and Skill Come with Age," attention is drawn to the fact that older workers make good employes. With family responsibilities, they are more stable in their jobs and actually, according to U. S. Bureau of Labor statistics, have fewer accidents.

Dr. Rusk mentions the Forty Plus Club in New York City, composed of men over the age of forty who have had extensive executive experience, which has been successful in obtaining jobs for over 70 per cent of its 3,000 members.

These organizations are constructive in nature in meeting the evident need, not only of putting to work more of those chronologically in the older age group, but still physiologically young and able to be productive for the good of themselves as well as their communities. The tragedy of old age is when one's mental and physical disabilities force him to become entirely dependent on society. Many in the older age group need not be dependent on others. This is a fact which needs emphasis.

RADIO "BUNK"

WHEN a physician hears over the radio, as he so frequently does, that the majority of his profession recommend a certain brand of cigarette, or that dentists prefer a certain dental powder to a cream, or that nurses who have to be dainty use a certain kind of soap, he is inclined to react with the word "bunk," whether expressed or not.

While many physicians smoke, they doubtless use as great a variety of brands of cigarettes as the general population. While sampling of the profession in regard to cigarette preference may have been carried out, we challenge the correctness of the conclusion that a majority prefer any one brand. The same applies to any majority preference on the part of the dental or nursing profession. We are not informed on the brand of cosmetics used by Hollywood stars, but we have the feeling that most of them use too much of everything which does not improve on nature. We have heard that most of them have capped incisors and deem this necessary as screen magnification tends to show up dental imperfections.

How long is the opinion of the profession going to be falsely broadcast on the air? Such falsification which must be obvious to the radio audience only detracts from the confidence which the radio industry must desire for its broadcasting.

SOCIALISM VERSUS COMMUNISM?

"There could hardly be a more perverse and mistaken idea than the idea that you can fight communism with socialism. So-called 'gradual' socialism is at best a halfway step toward communism. The economic ideals of socialism and communism are identical. Both believe in government ownership and operation of the means of production. Once this ownership and operation become sufficiently extensive, the government has economic life-and-death powers over the individual. It can say where he must take his job, what job he must take, or whether he can take a job at all. And once the government has this power, the liberty of the individual has in fact, if not in form, disappeared. As Alexander Hamilton pointed out in the Federalist Papers a century and a half ago, 'A power over a man's subsistence amounts to a power over his will.'"—HENRY HAZLITT.

A NEW CANCER EDUCATIONAL SERVICE

A. H. WELLS, M.D., Chairman
Cancer Committee, MSMA

A new and valuable service in the fight against cancer will soon be available to the physicians of the state.

The House of Delegates and Council of the State Medical Association has approved a new cancer educational service, which will offer help without expense to local physicians, hospital staffs, or county medical societies.

Three functions provided by the service will aid doctors in controlling cancer, which takes an annual toll of 180,000 lives in the United States. Recognized as a major health problem, cancer has become second only to heart disease as a cause of death, and ranks first for women between the ages of thirty-five and fifty-four. Fortunately, an enlightened public is now seeking earlier treatment, the physicians are well prepared with knowledge and facilities, and science, through research, continues to offer hope of an ideal preventive or cure.

Educational Services

The Purpose.—To establish a cancer educational service which would be readily available to the Minnesota county medical societies, hospital staffs, and individual physicians.

Collaborating Physicians.—Will be a group of recognized specialists who are qualified to give authoritative opinion on some phase of cancer diagnosis or treatment. The collaborating physicians will be men with the above qualifications selected by the Cancer Committee of the State Medical Association who will volunteer to take part in the educational service program. This group may be added to at any time to include physicians for special problems.

Plans.—The Cancer Educational Service will offer three types of service without expense to local physician, hospital staff, or county society.

(a) A team of from three to five members of the Cancer Educational Service will be offered to any component society of the Minnesota State Medical Association for a one-day cancer institute.

(b) One or possibly two members of the cancer educational service will be available to meet with any hospital staff in the state, no matter how small, for an afternoon or evening of cancer discussion.

(c) A free cancer correspondence service through which any physician may write confidentially to the Cancer Educational Service regarding any problem concerning a cancer case. Such inquiries will be referred to the member of the Cancer Educational Service who seems best qualified to answer this particular inquiry. The names of the physicians making the inquiry will not be divulged. The opinion obtained by the Cancer Educational Service will be forwarded on to the physician making the inquiry. Inquiries which seem to be of special interest and the opinion obtained will be published in MINNESOTA MEDICINE from time to time, without the names of the physicians being used.

Headquarters.—The headquarters of the Minnesota State Medical Association shall be the office of the Cancer Educational Service of the Cancer Committee.

Operation.—The Cancer Educational Service will be carried on under the direction of the Cancer Committee of the State Medical Association. All communications relative to this service shall be mailed out on special stationery of the Minnesota State Medical Association Cancer Committee carrying the address of the State Medical Association Headquarters in Saint Paul. The Cancer Control Division of the Minnesota Department of Health will finance a secretarial service to aid in the operation of the educational service. This secretarial service will take care of scheduling the collaborating physicians for county medical society and hospital staff meetings. Also this service will submit correspondence inquiries to the selected collaborating physician and transmit the reply to the inquiring physician. The Cancer Control Division of the Minnesota Department of Health will aid the Cancer Committee in every way in promoting and carrying out these institutes and staff meeting conferences.

Financing.—This service will be principally financed through funds of the Cancer Control Division of the Minnesota Department of Health, but other organizations, such as the Minnesota Division of the American Cancer Society may also contribute to this service. Collaborating physicians will be paid an agreed stipend for the services rendered. This stipend tentatively has been set at $50 and expenses for each meeting in which the collaborating physician participates.

County Medical Societies.—The facilities of the Cancer Educational Service will be available in the territory of any component county medical society as soon as official approval by the county society or its authorized officers has been given for the cancer committee educational service in the territory.

POVERTY AND DISEASE

It is well known that the incidence and severity of illness are greater among the urban poor than among the more prosperous groups. Ignorance is a factor in promoting high sickness rates, but ignorance is in part a result of poverty.—*Medicine in the Changing Order, Rep. New York Acad. Med. Comm., The Commonwealth Fund, 1947.*

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CONGRESS CONSIDERING DRAFT OF PHYSICIANS

Planning for the possibility of another national emergency is naturally of vital concern to members of the medical profession, in view of the general confusion which reigned during the last war with regard to the utilization of medical personnel and facilities. These plans have, however, taken an unexpected turn with the appearance in Congress of a bill (H.R. 6401) which asks among other things that the President be authorized to draft certain members of the medical profession under the age of forty-five.

The House is now considering this bill. According to latest reports, the army, the air force, the navy and the marine corps under this bill can call in doctors so as to maintain a ratio of five doctors to every 1,000 men on active duty.

Here, in order of priority, are the qualifications making a physician under forty-five years of age eligible for call:

(1) If he accepted government aid in securing education or was deferred for that purpose and had no active duty as a commissioned officer.

(2) If he participated in the specialized training programs and served for less than twenty-four months.

(3) If he is under thirty-five and served less than ninety days on active duty.

(4) If he is over thirty-five and served less than ninety days on active duty.

(5) If his total active service is less than twenty-four months.

(6) If he comes under some other classification to be prescribed by the President.

AMA Protests Physician Induction

The AMA Council on National Emergency Medical Service which has been studying ways and means of bringing order out of chaos among medical ranks in time of emergency has protested to officials in Washington that provisions for inducting physicians included in H.R. 6401 are "unnecessary and discriminatory and constitute a reflection on the patriotism" of the medical profession.

Physicians throughout the country, both those called upon to serve in the armed forces and those left to provide medical care for the civilian population, met every demand for medical personnel without compulsion by law. There is certainly no reason to believe that physicians will not again respond in the same manner if the need should arise. Yet there is strong evidence in the present proposal that the federal government officials are not willing to accept this record of physicians as proof of their good faith.

On April 5 and 6 the Council on National Emergency Medical Service of the AMA held a meeting in Chicago to discuss plans for national defense against atomic, biologic and psychologic warfare. The Minnesota State Medical Association was represented by the Chairman of our Committee on Military Affairs. The work being done by this AMA Council typifies the willingness of American physicians to take the lead in strengthening our national defenses.

Medical Inventory Predicted

It has been predicted that in planning for national civil defense a number of physicians will be needed to serve full time with the Department of Civil Defense, assisted by a panel of medical advisers. The possibility is also strong that the army will call upon the AMA Council for a survey of medical personnel; a check on needs of civil and military organizations; and the establishment of physical standards for military service. The AMA will in turn ask state and county medical societies to co-operate.

A reactivation of the machinery for defense and war is now well under way nationally.

Selective Service would like to have a physician appointed to each of its local boards. Physicians will serve as examiners as they did for World War II, according to present plans. From this it can be seen that physicians will be asked for the same type of service in the event of another war as formerly, with the exception that should present legislation be passed physicians will also be drafted.

It is the opinion of the American Medical Association and its Council on National Emergency Medical Service that this would not give proper recognition to civilian needs. As in the last war, civilian doctors will find themselves shorthanded; the very problem which the Council is seeking to avoid will be re-created. There is, in addition, every indication that even more physicians will be needed on the home front in a future war because of the danger of atomic attack and the increasing possibilities for civilian involvement.

Ask National Civilian Medical Board

The Council on Emergency Medical Service is asking that there be established immediately a national civilian medical board, paralleling the functions of the National Security Resources Board, which would have charge of policies and programs for medical, health and sanitary services for the civilian population, for industry, for agriculture and for the armed forces during an emergency or period of national mobilization. This board is absolutely essential to prevent avoidable depleting of the supply of doctors to take care of the people at home.

The medical profession will undoubtedly have a prominent role in activating whatever plans for national defense are finally evolved. In addition to these responsibilities, every physician should be on the alert regarding his probable military status. The Senate military committee is considering a proposal to examine and classify physicians both physically and professionally and to assign every doctor to military or civilian duties. The idea is to have those physicians in the military service remain in private practice until their services are needed elsewhere. It seems very likely that definite steps will be taken by Congress in the near future to enact definite defense measures along the lines outlined here. It is assured that the Association will be kept informed on these developments.

MEDICINE AWAITS RESULTS OF NATIONAL HEALTH ASSEMBLY

To all outward appearances the recent National Health Assembly in Washington was a fair and hard-working conference, with a profusion of congratulatory messages exchanged among the participants at the conclusion of the sessions.

The question being asked by the medical profession today is—"What happens now?" That question will be answered only when the official published report of the deliberations and conclusions of the fourteen section meetings which were held is finally handed out from the office of Mr. Oscar R. Ewing, Federal Security Administrator, who called the Assembly at the request of President Truman.

From the preliminary reports and conclusions already briefly publicized, a number of highly encouraging developments have been noted, although it is too early to predict what the end result will be. Apparently, a real attempt was made to meet issues squarely and to be mutually tolerant. And although the followers of compulsory health insurance weren't by any means "converted" they did on several occasions admit that the principle of the voluntary prepayment plan is highly desirable and that these plans should be encouraged and extended. Physicians will want to keep in touch with the developments following this meeting.

Another Assembly Planned

The Executive Committee of the Assembly is planning to have another meeting to decide on future plans along these lines. They will discuss the advisability of holding such Assemblies periodically, perhaps every five years.

This Executive Committee represents part of the steering machinery of the Assembly. Members were appointed a month in advance by Mr. Ewing. The medical profession was outnumbered on the original panel, but additional medical representatives as well as members of other professions were placed on the committee when the discriminatory nature of the initial plans for the Assembly was pointed out by the AMA in an editorial in the *Journal*.

MSMA Represented at Conference

The Minnesota State Medical Association, at the direction of the Council, sent three representatives to the meeting; the Chairman of the

Committee on Public Policy attended as an official delegate, while the Chairman of the Council and the Executive Secretary served in the role of observer only.

Each of the 800 delegates, of whom 200 were doctors, was enrolled in one of the fourteen sections which were assigned to the discussion of a particular problem. Section subjects were: (1) Health and Medical Personnel, (2) Hospital Facilities, Health Centers and Diagnostic Clinics, (3) Local Health Units, (4) Chronic Disease and the Aging Process, (5) Maternal and Child Health, (6) Rural Health, (7) Research in the Service of Health, (8) Medical Care, (9) State and Community Planning for Health, (10) Physical Medicine and Rehabilitation, (11) Dental Health, (12) Mental Health, (13) Nutrition, and (14) Environmental Sanitation.

Most difficult assignment of the whole conference was the one handed to the section discussing ways and means of providing medical care. It was ably carried out by Dr. Hugh R. Leavell, professor of public health practice at Harvard, who acted as chairman and succeeded in bringing into agreement on a number of points a group of persons with the most widely divergent viewpoints possible. Members of the committee under Dr. Leavell were Dr. Ernst P. Boas, Physicians' Forum; Nelson Cruikshank, director, social insurance activities, AFL; Horace Hansen, general counsel, National Federation of Health Co-operatives; Dr. Thomas A. McGoldrick and Dr. James R. McVay, AMA; Harry Read, CIO; Dr. C. Rufus Rorem, Philadelphia Hospital Council; and Dr. Louis Wright, Harlem Hospital.

After heated discussions agreement was reached on seven points discussed. However, an eighth point was taken up, but according to the summary statement released at the close of the sessions, it was left unsettled. It will come as no surprise to physicians that Point Number 8 was the issue of compulsory national health insurance.

MENTAL HOSPITAL FIGURES RELEASED

An interesting report to come from the Mental Hygiene Division of the United States Public Health Service is one just released giving the national picture on conditions in mental hospitals. The report shows Minnesota standing about in the middle—neither much better nor much worse that the national average for such things as expenditures per patient; percentage of overcrowding, et cetera.

Figures summarizing the national picture from 1937 to 1946 reveal a gradual increase in the number of patients confined in mental hospitals; and although there has been some expansion, increases in facilities and personnel have lagged behind the increases in the number of patients. Percentages of overcrowding have increased several points; and whereas there were 5.8 patients for each employe in 1937, employes now are responsible for at least one more patient apiece.

Overcrowding in Minnesota institutions is about half as bad as the national figure—nationally there are 16.3 per cent more patients than facilities warrant, whereas in Minnesota there are 8 per cent more. The United States spends more per patient on the average than Minnesota does—$436.72 per patient nationally; $328.66 for Minnesota patients. National average for number of patients assigned to each employe is 6.2—in Minnesota it's 7.5.

Twenty-eight states are more overcrowded than Minnesota—twenty, including the District of Columbia, are less overcrowded. Seventeen have more patients per employe than Minnesota, while twenty-nine states, including the District, have fewer patients per employe, while two states are the same as Minnesota in this regard. Thirty-one states, including D. C., spend more per patient—seventeen spend less.

MEDICAL COSTS ANALYZED

A new study on "Comparative Increases In the Costs of Medical Care and the Costs of Living" is now off the press. Authored by Frank G. Dickinson, Ph.D., director of the American Medical Association's Bureau of Medical Economic Research, this study reports that living costs have skyrocketed at a much faster rate than physicians' fees.

The quantity of medical care received by Americans, according to Dr. Dickinson's findings, was two-thirds greater in 1946 than in 1939. He also found that the amount of care has increased faster than the number of physicians. The apparent increase in "output" of physicians is laid to the increasing use of technical assistants.

"Whether one examines the record of total expenditures of the American people for medical

care or the prices of significant items during recent years, he comes to the general conclusion that the American people have been fortunate in that the costs of keeping well have not risen as rapidly as the costs of living," Dr. Dickinson concludes.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary
230 Lowry Medical Arts Building
Saint Paul, Minnesota

Texas Eye Swindler Sentenced to Five-year Term in Minnesota Prison

Re State of Minnesota vs. Elliott Wilkinson.

On May 14, 1948, Elliott Wilkinson, 54 years of age, Dallas, Texas, was sentenced to a term of not to exceed 5 years at hard labor in the Minnesota Prison at Stillwater, Minnesota, by the Hon. Karl Finkelnburg, Judge of the District Court at Winona, Minnesota. Wilkinson was sentenced following his plea of guilty, on the same date, to an information charging him with the crime of grand larceny in the second degree. That charge grew out of Wilkinson's arrest on May 9, 1948, by Winona, Minnesota, police officers after Wilkinson had swindled a Winona County farm woman out of $60 by falsely representing himself as an eye specialist from Chicago, Illinois, and further stating that the patient was afflicted with cataracts and that they must be immediately removed.

Wilkinson is an old-time eye swindler, who, with an accomplice, forfeited $8,000 in cash bail at New Ulm, Minnesota, in September, 1924, after both had been arrested for swindling a Brown County farmer out of $1,500. In the Brown County case, Wilkinson was not apprehended until 1932, at which time he was returned to New Ulm from Houston, Texas. On April 8, 1932, Wilkinson was sentenced by the Hon. A. B. Gislason, Judge of the District Court at New Ulm, to a term of not to exceed 5 years in the State Prison at Stillwater for grand larceny in the first degree, growing out of the $1,500 swindle perpetrated by Wilkinson and his accomplice in 1924. Wilkinson served at the Minnesota State Prison until November, 1933, at which time he was released and returned to Texas. In 1936, Wilkinson was arrested in Omaha, Nebraska, and removed to Norfolk, Virginia, where, on February 1, 1937, he pleaded guilty to using the mails to defraud. For that offense, Wilkinson admitted that he was sentenced to serve 7 years in the Federal Prison at Atlanta, Georgia. Wilkinson stated that he served in the Atlanta Prison until November 26, 1941, on which date he was transferred to the Virginia State Prison at Richmond, Virginia, to serve 5 years on the charge of swindling to which Wilkinson had pleaded guilty at Courtland, Virginia, just prior to his being sentenced in Federal Court at Norfolk, Virginia, in 1937. Wilkinson stated that he served in the Virginia State Prison until May, 1945. It is Wilkinson's claim that he was not arrested for any offense after being discharged from the Virginia State Prison, until he was arrested at Winona, Minnesota, on May 9, 1948. In explaining his method of operating, Wilkinson stated that he would seek out farm people, representing himself as an eye specialist, diagnose the case as cataracts and then proceed to extract a large sum of money from the patient. Upon receiving the money, Wilkinson stated that he would insert a liquid preparation in the eye and then show the patient a small piece of tissue paper, which Wilkinson represented as being the removed cataract. Just prior to his arrest at Winona, Wilkinson had attempted to swindle a Wisconsin farmer out of $1,400 in a similar fake eye operation. However, the farmer discussed the matter with his banker and was persuaded not to withdraw the money from his bank account.

The Minnesota State Board of Medical Examiners wishes to acknowledge the very fine co-operation received in this case from Sheriff George L. Fort of Winona County, County Attorney W. Kenneth Nissen, and the officers of the Winona Police Department. Wilkinson's prompt arrest at Winona was due, in large part, to the fact that the patient who had been swindled of the $60.00 reported the matter to the authorities, giving them an excellent description of Wilkinson which was published in the Winona *Republican-Herald*.

COR BILOCULARE

(Continued from Page 662)

cultures of the cardiac vegetations were not possible. Tiny Gram-positive cocci were found in pairs in the smears.

Summary

The case of a man, aged twenty-seven, dying as the result of congenital cardiac anomalies and their complications, including situs inversus subtotalis, cor biloculare, transposition of the aorta and pulmonary artery, pulmonary stenosis, absence of the ductus arteriosus, streptococci endocarditis on the atrioventricular valve leaflet, and evidences of chronic congestive heart failure, has been described.

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Minneapolis Surgical Society

Meeting of February 5, 1948

Dr. L. Haynes Fowler, Presiding

CARCINOMA OF THE ESOPHAGUS

Resection, High Esophagogastrostomy

THOMAS J. KINSELLA, M.D.

Minneapolis, Minnesota

Carcinoma of the esophagus constitutes about 2 per cent of all carcinoma but is not ordinarily given the thought and consideration which its frequency would seem to warrant. Clinically, this condition usually manifests itself first by dysphagia. The patient frequently first chokes on a rather large morsel of food. Then he becomes more careful about chewing and has no difficulty for a month or two after which the same sequence may again be repeated. This may occur several times before medical aid is sought. The history may reveal no episodes of choking but only a gradually increasing dysphagia, first for solid foods and then for softer things, and only late for liquid foods. An average time interval of about six months elapses between the onset of the first symptoms and the establishment of the true diagnosis. Most of this delay may be the fault of the patient, but not infrequently the physician does not appreciate the significance of dysphagia and must bear an equal if not greater responsibility. Dysphagia, however slight, must not be passed over lightly; it should call for a thorough study, including not only x-ray examination of the esophagus but also esophagoscopy if the former does not reveal a cause for the difficulty.

Esophageal carcinoma occurs most commonly in individuals between the ages of forty to sixty years (75 per cent), perhaps slightly earlier in women than in men. The condition occurs four or five times as commonly in men as in women. The lesion may occur in the upper, middle or lower third of the esophagus. Two years ago, before this society, I presented some cases of carcinoma of the lower portion of the esophagus surgically treated by resection and esophagogastrostomy. This evening I wish to discuss carcinoma of the middle third of the esophagus and to present a case which illustrates well the problems and difficulties encountered in successful treatment of a lesion in this region.

The esophagus in the mid-third, which extends from just below the bifurcation of the trachea to the apex of the pleura, lies in a very confined space, hemmed in by the trachea and its bifurcation, the arch of the aorta, the vertebral column and the right pleural reflection. Tumors arising in this region tend to spread to the regional lymphatic nodes about the bifurcation of the trachea or to the cervical lymph nodes, or by direct extension to invade the trachea, the aorta, or the pleural cavity on the right. Their successful treatment is not only difficult but quite hazardous and not too frequently undertaken.

Until a few years ago, dilatation, gastrostomy or anterior esophagostomy were the only means available for the relief of patients suffering from this type of lesion. Repeated dilatation over a string may keep the lumen of the esophagus open to a moderate degree and enable the patient to swallow liquids and soft foods until metastases or extension terminate the picture. Gastrostomy at best is a very unsatisfactory answer to this problem. The patient cannot swallow or enjoy his food and is tormented by a profuse secretion of mucus from the esophagus above the obstruction which plagues him day and night. If carried out late when the patient is in a debilitated condition, the operative procedure alone may carry a mortality of approximately 50 per cent. Resection of the local lesion with creation of a cervical esophagostomy, later to be connected to a gastrostomy opening by an external tube of rubber (the Torek operation), or by creation of a skin tube of the Gilles type, is at the best a very unsatisfactory procedure.

Primary resection of the offending lesion with mobilization of the stomach and primary anastomosis between the esophageal stump and the stomach high in the chest presents a much better answer to the problem, but is fraught with technical difficulties which increase as the apex of the pleura is approached. The patient whose case history I am presenting this evening illustrates these difficulties well, for his lesion lay very high and the reconstruction necessary involved making an anastomoses between the lower end of the cervical esophagus and the elevated stomach, a technical problem whose solution was considerably facilitated by the use of some special miniature de Martel clamps which we had made for this specific purpose.

Case Report

S. G., a man, aged fifty-seven, was admitted to St. Mary's Hospital, October 29, 1947. His general health had always been good until about seven years previously when he developed a carcinoma of the larynx which was successfully treated by total laryngectomy. An excellent result was obtained, leaving him with a permanent suprasternal tracheotomy. He had remained in good health subsequently and had reported to his original surgeon every six months for a re-check since that time.

About June, 1947, he began to have slight difficulty in swallowing, particularly for solid foods. As this did not improve he reported again to his original surgeon who found the cause of his difficulty to be an obstruction in the esophagus just above the arch of the aorta as demonstrated on the barium esophagram. Esophagoscopic examination did not visualize any tumor tissue which could be biopsied to establish a definite diagnosis. The possibility of primary carcinoma was

considered, but because of the previous carcinoma of the larynx and in the absence of a demonstrable ulcerative lesion it was considered logical that the obstruction was the result of possible metastatic carcinoma in the lymph nodes in the upper thorax. Surgical exploration was not recommended. Esophageal dilatation with sounds was carried out at once, repeated eight days later and again a month later. Subsequently, in September and October he was seen by Dr. Paul Boman of the Duluth Clinic, who also made an additional esophagram which revealed a localized obstruction slightly above the level of the arch of the aorta, of a character suggesting a primary esophageal lesion rather than extrinsic pressure obstruction. Dysphagia of moderate degree persisted in spite of the repeated dilatation, with progressive weight loss totaling 30 pounds. There was no pain nor cough, nor could any lymph nodes be palpated.

Physical examination revealed a well-developed, well-nourished sturdy individual, weighing 192 pounds in spite of his recent weight loss. His complexion was very florid. There were no palpable lymph nodes. There was a tracheotomy tube in the suprasternal region in a well-healed vertical scar from previous total laryngectomy. The blood pressure was 150 systolic and 100 diastolic in millimeters of mercury. The pulse was 88 per minute. The temperature was 99.2 degrees. The remainder of the physical examination was negative.

Laboratory examination revealed a hemoglobin of 102 per cent, red blood count of 5,490,000 cells per cubic millimeter and white blood cells 6,050 for each cubic millimeter. Differential count showed 70 per cent polymorphonuclear leukocytes and 30 per cent lymphocytes. The bleeding time was 4 minutes, coagulation time 4 minutes and 30 seconds. The blood was group 4.0, Rh negative. Total blood proteins were 7.0 grams, with 5.5 grams serum albumen and 1.85 grams of globulin. The urine was acid, the specific gravity was 1.014. There was no albumen nor sugar, and only a few epithelial cells were found in the sediment. An electrocardiogram revealed only a left axis deviation. Roentgen examination of the chest revealed the heart and aortic shadows to be normal in size, shape and position, with no broadening of the mediastinum. The lung fields were within normal limits. A lateral view of the thorax revealed no masses suggestive of mediastinal lymph node enlargement. Esophagoscopic examination was carried out October 20, 1947, by Dr. Kenneth Phelps. Only a conical narrowing of the esophagus was revealed in the involved area. It was lined with normal appearing mucosa and showed no tumor from which biopsy material could be obtained. There was no evidence of extrinsic displacement of the esophagus.

A tentative diagnosis of primary esophageal carcinoma was made and the condition and its possibilities and difficulties fully discussed with the patient and his medical relatives. Exploratory thoractomy in the hope of carrying out a resection was recommended.

Operation was carried out October 31, 1947, at St. Mary's Hospital, Minneapolis, under intravenous pentothal and curare (Baird's solution), with the intratracheal tube in place, through which 50 per cent oxygen and nitrous oxide was administered by Dr. Joseph Baird. A total of 3 grams of pentothal and 120 units of curare were used. With the patient in right three-quarters prone position, a wide, oblique, posterior incision was made with resection of a wide segment of the posterior sixth rib. The pleural cavity was opened and the thorax explored. Exploration of the hilar region of the lung revealed no enlarged or palpable lymph nodes present. The mediastinum was opened inferior to the arch of the aorta, and the exploring finger revealed no enlarged lymph nodes and no tumor mass until the finger was inserted well in front of the arch where the lower border of an apparently intrinsic tumor mass could be palpated with the tip of the finger. The mass was well above the upper border of the arch of the aorta and confirmed our impression that this was an intrinsic carcinoma and not an obstruction resulting from metastatic nodes. The upper mediastinum above the arch of the aorta and posterior to the left subclavian artery was opened, and again no metastatic nodes were palpated. The tumor seemed to be movable, but because of its very high position it was realized that difficulty would be encountered in reconstruction which must follow any removal. The possibilities and dangers of its removal were then discussed with medical relatives present at the operation and attempt at resection was decided upon.

The thoracic incision was then extended, cutting two ribs above and one below the previous site. The mediastinal pleura was split from the aortic arch to the diaphragm, the lower esophagus mobilized and a traction tape placed about it. The vagus nerves were sectioned, and the esophagus was dissected free from the arch of the aorta to the diaphragm. The diaphragm then was split from the hiatus laterally nearly to the chest wall, the stomach mobilized on both lesser and greater curvatures, keeping well away from the border of the stomach, to preserve the anastomic arches, freeing the stomach down nearly to the duodenum, being careful to preserve the right gastric and the right gastroepiglottic vessels. The left gastric artery and left gastroepiglottic and the vasabrevia to the spleen were all sectioned and ligated. This allowed the stomach to come freely into the chest. Dissection was then carried up along the esophagus behind the arch of the aorta, separating the esophagus from the aorta and from the adjacent bifurcation of the trachea, until the tumor mass was reached. This was then dissected up as far as possible on all sides with the finger, clamping and ligating any cord-like attachments in order to control the blood supply from the aorta to this area of the esophagus.

A special small 2-inch de Martel type of clamp was then placed across the esophagus, just below the arch of the aorta, and closed. The esophagus then was grasped with a special Buie type of hemorrhoid clamp just distal to the de Martel clamp and the esophagus sectioned in between with a scalpel. Two similar Buie clamps were then placed across the esophagus at its junction with the stomach and the esophagus cut across between them, thus removing the lower thoracic esophagus. The stomach defect was then closed with a continuous chromic catgut suture for hemostasis and this defect inverted into the stomach and the closure line reinforced with interrupted silk sutures. A heavy silk suture attached to the small de Martel clamp was then passed around the arch of the aorta and brought out through the mediastinal pleural opening above the arch and posterior to the subclavian artery. Then the esophagus, with the clamp attached, gradually was brought around the aortic arch and out through the pleural opening into the pleural cavity above the arch.

By more finger dissection the esophagus and its tumor was then freed of all attachments, none of which were dense, and delivered into the upper part of the pleural cavity. This was accomplished with considerable difficulty because the tumor was about 4 centimeters long and extended up beyond the line of pleural reflection, so that in order to deliver it into the thorax it was necessary to mobilize the esophagus well above the tumor and to pull it down into the thorax. This involved mobilization of the lower end of the cervical esophagus. Firm traction was then applied to the de Martel clamp to bring the cervical esophagus into the upper chest, and two additional de Martel clamps were placed adjacent to each other above the upper limits of the tumor and closed, crushing across the esophagus. The esophagus was then cut between these two clamps, and the tumor removed from the chest. Closure of these clamps was accomplished with some difficulty because the ordinary de Martel-Wolfenson closure clamp is too large and cumbersome to be used high in the

thorax. For this job we used a specially devised closing forceps made from an ordinary pair of pliers, which grasped and closed the two clamps quite satisfactorily in this limited space.

The upper de Martel clamp which was on the lower end of the cut esophagus then was grasped by the long de Martel clamp holder and traction exerted upon it, pulling the esophagus down in order to start our anastomosis. In order to facilitate this, the clamp holder with attached clamp was rotated posteriorly as traction was applied, thereby exposing the anterior wall of the esophagus. A series of five interrupted mattress sutures were placed through the muscular wall 5 or 6 millimeters proximal to the crushing clamp and the needles left attached to these long silk sutures. An area was then selected on the posterior wall of the stomach, slightly below its upper end and a small button of gastric wall excised. All bleeders were controlled by ligature of fine silk, and all stomach contents aspirated from the organ to prevent soilage in the operative field. The stomach was then elevated to the apex of the pleura which it reached without any tension. The previously placed sutures were completed through the gastric serosa and muscularis, and were tied up, thereby approximating and completing the first row of sutures. The placing of these sutures and the typing was greatly facilitated by the traction which could be maintained on the de Martel clamp still in position on the lower end of the esophagus. Had this clamp not been left in position the esophagus would have retreated up into the neck and prevented anastomosis. Traction might also be maintained by pulling on the esophagus and tumor, but only with greater chance of contamination and more technical handicap because of the very limited space.

A similar set of sutures was placed through the muscular wall of the esophagus above the clamp on the posterior aspect. The needles were left attached again and tagged to be used later to complete the anastomosis. This set was placed again as a precautionary measure for holding traction on the esophagus in case it attempted to retreat after taking off the de Martel clamp. The de Martel clamp then was removed from the esophagus. No attempt was made to excise the crushed portion, a techincal point which we always insisted upon in lower anastomoses because of the poor esophageal blood supply. The mucosa of the esophagus and the adjacent mucosa of the gastric defect were then sutured together in a second anterior row of interrupted mattress sutures of No. 3 silk. A series of five sutures was placed. A nasal suction tube then was passed up the esophagus into the muoth where the anesthetist retrieved it and pulled up the greater length of the tube, leaving only enough to extend down to the pyloric region of the stomach.

A series of five interrupted mattress sutures of silk then were placed in the mucosa of stomach and esophagus, approximating these two layers as the first row of the posterior suture in the anastomosis. The sutures previously placed posteriorly in the esophagus now were completed through the adjacent serosa and muscle of the stomach, the second posterior row finishing the anastomosis. This anastomosis was accomplished only with the greatest difficulty because of its location high in the chest and the extremely cramped quarters which made the placing of all sutures very, very difficult. At best we must concede that the anastomosis was not a perfect one and that leakage might be anticipated. The stomach then was sutured to adjacent pleural structures, with a series of interrupted chromic catgut sutures in order to remove all tension from the anastomotic line. The diaphragmatic defect was then closed by imbrication using interrupted No. 2 forty-day chromic catgut, leaving a fair sized hiatus above the elevated stomach and then suturing the cut edge of the diaphragm to the adjacent stomach wall. The pleural cavity then was washed out thoroughly with copious quantities of salt solution. Five intercostal suction catheters were inserted through the chest wall with their tips placed in strategic locations where fluid might be expected to form or to pool and three grams of sulfathiazole and sulfanilamide dusted around the anastomotic site and in the adjacent pleural pockets. During the whole procedure the lung was reinflated repeatedly in order to prevent permanent atelectasis.

Fig. 1. Miniature De Martel clamps, closing forceps, and holding clamps.

The chest wall then was closed in layers as in any other thoractotomy, after inserting about 300 cubic centimeters of salt solution into the chest to prevent clotting of any oozing blood which might plug our suction catheters. The patient tolerated the extensive and very prolonged (fourteen hours) surgical procedure very well. While on the table he received a total of 6 liters of blood, 500 cubic centimeters of normal saline and 500 cubic centimeters of 5 per cent dextrose in normal salt solution. He was returned to this bed in good condition and placed in an oxygen tent. Continuous suction was applied to the stomach tube and continuous suction at minus 20 centimeters of water applied to the intercostal catheters in order to remove all fluid from the pleural cavity and to keep the lung expanded. Penicillin and sulfadiazine were administered postoperatively and adequate amounts of fluid given subcutaneously and intravenously for the first seven days, during which time nothing was allowed by mouth. He developed a great deal of mucus in his chest postoperatively but this was removed successfully by using a suction catheter through the tracheotomy opening. After the fifth postoperative day, small amounts of water were inserted through the nasal catheter as soon as it was evident that the pylorus had opened up from the effects of the vagotomy. Increasing amounts of liquids were then given through the catheter until after the seventh day when liquids were given by mouth.

The patient was discharged from the hospital on November 25, 1947, ambulatory, on his twenty-sixth postoperative day. On November 20, 1947, his twentieth postoperative day, the anastomotic orifice was dilated over a string up to a No. 38 French dilator in order to be sure that the lumen of the anastomosis was adequate. There is a very considerable tendency for stenosis to develop in the anastomotic site, particularly where constructed under considerable technical difficulty, so he may have to be dilated on a number of occasions subsequently. His condition has remained good since that date, with only the usual discomfort which accompanies distention of the stomach in the chest and some cutting down of his breathing space by such pressure.

Of course, he has also had the usual gastrointestinal disturbances incident to the vagotomy necessary in such a procedure. Recently Dr. Boman wrote that he is feeling very well, swallowing freely, and that a No. 46 French dilator may be massed without meeting obstruction, so the anastomosis has been kept at full lumen. The illustrations will give a good idea of the original lesion, the position of the stomach in the thorax, and the location of the anastomosis at the level of the sternoclavicular joint.

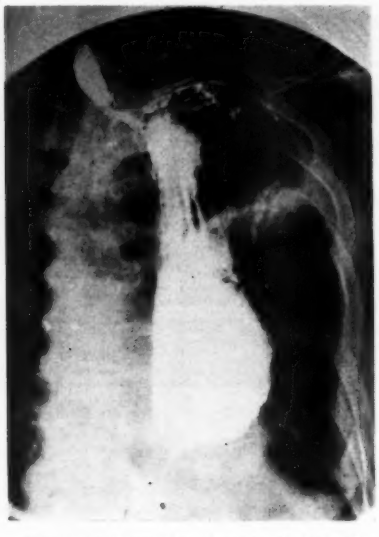

Fig. 2. Postoperative view of a high esophagogastrostomy.

The de Martel clamps which we have used in the anastomosis were especially devised for this procedure. They are identical in form and line with the larger de Martel clamps but are only 2 inches in length, which is adequate for the ordinary undilated esophagus. Such clamps offer distinct advantages in this type of surgery. In the first place they do not slip off the crushed esophageal stump and are therefore safer than an ordinary ligature which has been used as the esophagus is passed behind the aortic arch, as is necessary in this procedure. Secondly, by the use of this clamp it is possible to use traction in the esophagus to pull it down and hold it until sutures are placed to maintain it in position. Thereby, a higher anastomosis is made possible than could be done without the use of this device. It may be used also to advantage in similar situations in other places, such as for control of the esophagus in total gastrectomy, or even in the colon, deep in the pelvis, where an end-to-end anastomosis is to be made.

This case report illustrates what can be done in the way of total resection of the thoracic esophagus and re-establishment of intestinal tract continuity by anastomosis of the cervical esophagus to the elevated stomach. The freely mobilized stomach easily reaches the apex of the pleura without tension, and I am sure that the stomach or a portion of it may be brought even into the neck, where an anastomosis at a higher level may be accomplished perhaps with less difficulty than the present one.

Discussion

DR. MAGNEY, Duluth: I am not acquainted with the modern procedure, but I recall the good old days when we dilated carcinomas of the esophagus. During my internship at the Ancker Hospital I prevailed on Dr. Ancker to purchase a dilating outfit, which in itself was quite an accomplishment. I was saved from embarrassment by the patient's inability to swallow the string. That night the patient died suddenly due to rupture of the aorta which the cancer had invaded.

DR. R. E. HULTKRANS: What percentage of all carcinomas of the gastrointestinal tract does carcinoma of the esophagus constitute?

DR. SCHLEMENSON: I should like to ask Dr. Kinsella what his experience has been in the use of radium therapy in the treatment of carcinoma of the esophagus.

DR. KINSELLA: Carcinoma of the esophagus constitutes about 2 per cent of all carcinomas; carcinoma of the lung, 12 to 15 per cent; carcinoma of the colon, about the same, 15 to 20 per cent.

Radiotherapy has not accomplished much with these patients. Most of these tumors are squamous cell epitheliomas. This area of the gastric mucosa does not respond well to x-ray therapy. You can maintain a lumen by use of a string.

REPORT ON A TOUR OF EASTERN SURGICAL CLINICS

ARNOLD J. KREMEN, M.D.

Minneapolis, Minnesota

It is a deep pleasure to be able to recount to this audience my experience on a tour to a number of the outstanding surgical clinics in the East and Midwest. Before proceeding, I wish to acknowledge my gratitude and appreciation to Dr. Owen H. Wangensteen and Dean H. S. Diehl and the University of Minnesota for having made this trip possible. The purpose of my trip was principally to investigate recent trends and developments in clinical surgery and research, to examine the teaching programs of the various schools and to observe the physical facilities, principally of operating suites that might advantageously be put to use in our own hospital.

During such a trip one forms a number of impressions, one of which has remained throughout the trip. To me the lack of productiveness of the large hospitals over 1,000 beds was quite striking. They seemed to get out of hand, so to speak, and lacked a unity of purpose or personal direction and interest. Some of the smaller hospitals, on the other hand, such as Massachusetts General Hospital of Boston and Strong Memorial Hospital of Rochester, New York, where the direction of the service was more closely supervised and the staff was a more closely knit group, appeared

to be achieving a greater over-all contribution to medicine. I have the impression that the optimal size for a teaching hospital is somewhere between 600 and 800 beds.

Time will not permit a detailed account of each institution, but I shall try to relate to you the highlights of each clinic as they appeared to me.

Tulane Medical School, New Orleans

Drs. Champ, Lyons and DeCamp are enthusiastic about preparing poor-risk patients for major surgery by multiple blood transfusions. They have written about "chronic shock" and have pointed out the contracted blood volume which occurs as an accompaniment of the malnourished state. Of most importance in this regard, they feel, is the total hemoglobin deficit. Correction of this plus the contracted blood volume by multiple whole blood transfusions during the preoperative period of preparation is their principal concern.

Dr. Alton Ochsner is quite partial to the use of cotton as a suture material. He uses it by preference in almost all cases and feels it has less tendency to be the cause of granulomas and to sequestrate than does silk. On the problem of thrombophlebitis, Dr. Ochsner stated his position is midway between Rochester, Minnesota, and Boston, Massachusetts. With a twinkle in his eye he said, "We ligate those that need ligation and give anticoagulants to those that need anticoagulants." I couldn't get him to expand on the problem much beyond that. He does feel that procaine sympathetic blocks have a definite therapeutic role in treatment of acute thrombophlebitis. He did not feel that vagotomy was proving its claims in the treatment of ulcer and stated that, in his opinion, gastric resection was still the treatment of choice in those ulcer patients who required surgery.

Dr. DeBakey stated that he was disappointed with most tests at present which attempt to portend the response to sympathectomy. As a result he has been extending lumbar sympathectomy to all patients with vascular insufficiency of the lower extremity. There have been a number of gratifying results in patients in whom the outlook before operation was almost hopeless. Also in those who subsequently required amputation it was possible to perform the amputation at a lower level than would have been necessary otherwise.

Barnes Hospital, Washington University, St. Louis

Drs. Graham and Burford are of the opinion that palliative pneumonectomies are not worthwhile. In contradistinction to the gastrointestinal tract, where it is well recognized that resection of neoplasms even in the presence of unresectable metastasis is a worth-while procedure, in that it extends the patient's life and makes him more comfortable, in carcinoma of the lung such palliation or prolongation of life has not resulted, in their experience. Dr. Graham stated that he was not aware of any successful pneumonectomy in a patient past seventy years of life. Of 1,000 thoracotomies that they have done for carcinoma of the lung, they have been able to resect 22 per cent of the cases.

Because of Dr. Graham's special interest in thoracic surgery, they have a superb chest service. The general surgical services, on the other hand, although of high calibre, did not appear to be on a par with the chest service.

Dr. Robert Elman is continuing electrolyte balance studies in surgical patients. Of interest is his finding that sodium chloride requirement in the average patient, without loss of intestinal content, is in the area of 2 grams per day.

Vanderbilt University, Nashville

Of special interest to me at the Vanderbilt Hospital was an exceptional sterile supply suite. It consisted of two large rooms completely separated by a partition which contained the autoclaves. These opened at both ends. In one room all unsterile materials were processed and put into the autoclaves. The sterile materials were removed from the other end of the autoclave in the second or sterile room. Hence all materials in one room were unsterile, and in the other room on the other side of the partition, all materials were sterile. The surgical service there is an excellent one under the direction of Dr. Brooks and associates, MacSwain and Daniels. Dr. Hahn has been doing some very interesting work with radioisotopes. They are in the advantageous position of being close to Oak Ridge and have done some of the fundamental work with radioiodine and gold.

Johns Hopkins Hospital, Baltimore

Unfortunately, Dr. Blalock was in England at the time of my visit so I missed the opportunity of visiting with him and seeing him operate. Dr. Longmire was carrying on in his stead and made the Blalock and portocaval operations look amazingly simple. Much of the experimental work in progress at the time related to problems pertaining to the cardiovascular system. On the general surgery service they were doing total gastrectomies routinely on all cases of carcinoma of the stomach. They admit it to be an experimental venture to see if the more radical operation applied to all cases, rather than to a selected few, will extend the cure rate.

University Hospital, University of Pennsylvania, Philadelphia

Dr. Ravdin and his associates have one of the outstanding clinics I had the opportunity of visiting. The clinical work was excellent; the research program and facilities were eminently good. Drs. Parkins and Rhode, by using a polythene tube in the vena cava of dogs, have maintained a continuous intravenous infusion for forty days. They administered 50 per cent glucose at the rate of 20 c.c. per kilogram per day (the equivalent of 1,500 c.c. to a 70 kg. man) over a twenty-four hour period without observing glycosuria or thrombosis. When given into a vein with a large enough flow, sufficient dilution of the glucose takes place immediately to prevent damage to the vessel.

From bacteriological studies of bowel content, Dr. Zintel and associates think that streptomycin given

orally in amounts of 1 gram daily in divided doses for four to six days is the most effective agent available in reducing the bacterial count of the stool.

New York Hospital, Cornell University, New York

In Dr. Ephriam Shorr's laboratory, Dr. Wheadon has been carrying on some very interesting studies relating to convalescence. He has noted a fairly marked nitrogen loss, occurring in normal people on adequate diets, as a result of the immobilization incident to going to bed. This began on the fourth day and continued up to the tenth day. Concommitantly, he noted an increased urinary calcium excretion unassociated with an increased citrate excretion which would tend to hold the calcium in solution. In addition the pH of the urine tends to rise further, increasing the tendency for the calcium to precipitate from solution.

In the operating suite they have installed a recovery ward where all postoperative patients are kept up to twelve hours or until they are awake, stabilized and responding. Two nurses, under the direction of the anesthesia and surgical house staff, look after the patients and give whatever supportive measures are necessary. They have found this arrangement to be of considerable assistance in relieving the load of nursing care on the surgical wards, and to offer better immediate postoperative care for the patients.

New Haven Hospital, Yale Medical School, New Haven

Of special interest at Yale was the work Dr. Darrow is doing on electrolyte balance. He has shown that in the diarrheas of infancy there is a considerable loss of potassium from the body which should be replaced. Furthermore, in some dehydrations there may be a shift of sodium ions into the intracellular compartment with loss of potassium from the cell. One of the things necessary to correct this situation may be administration of potassium ions. There appears to be a continuous loss of potassium from the body which normally is relatively small and probably of no major importance for a period of several days. However, over a longer period of negative potassium balance one should strongly consider replacing potassium deficits. The kidney does not appear to be able to selectively retain potassium as it does sodium. On the basis of Dr. Darrow's work, one's outlook on fluid balance problems should probably include the intracellular compartment and its requirements, in addition to the conventional concepts of extracellular and blood compartments that have absorbed the attention of most clinicians to date.

Harvard Medical School, Boston

The organization of the medical facilities of Boston under the direction of Harvard Medical School seems to me to be an outstanding administrative achievement. Four units, Massachusetts General, Beth Israel, Children's and Peter Bent Brigham Hospitals, are each autonomous but responsible to the over-all direction of the Harvard faculty. Each carries out its teaching functions, research program and clinical work independently but are bound to the medical school for top level policy, for leadership in maintaining standards of practice and to further the over-all teaching program. Each hospital gives up an iota of authority to the Harvard Medical School, but in return they gain tremendously in prestige in the community and on a national scale throughout the profession.

At Massachusetts General, considerable work is in progress under direction of Drs. Cope and Moore using radiosotopes in studies of intracellular metabolism. At Beth Israel Hospital, Fine and Seligman are continuing their excellent work on shock. They have recently demonstrated that one of the factors determining reversible or irreversible shock is the status of the hepatic circulation. By cross circulation experiments whereby they maintained an adequate hepatic circulation, animals would withstand procedures which in control preparations uniformly produced irreversible shock.

Dr. Swenson at Children's Hospital related some interesting esophageal work going on there. He has been able to resect 50 per cent of the thoracic esophagus in dogs, mobilize the remaining segments and do successful end-to-end anastomosis. In tracheo-esophageal fistula he is regularly doing primary anastomosis. On some of the earlier cases upon whom cervical esophagostomies had been performed, he has reoperated, mobilized thoracic and cervical esophagus and effected end-to-end anastomoses. In Hirshsprung's disease, Dr. Swenson feels the primary abnormality is a spasm in the area of the rectosigmoid. This can be demonstrated by barium enema if given slowly. He has had some encouraging results by resection of the involved area of sigmoid and rectosigmoid and doing a low anastomosis.

Strong Memorial Hospital, University of Rochester, Rochester, N. Y.

The medical school at Rochester was among the best of the schools visited. The beneficent influence and direction of Dr. George Whipple pervades the entire atmosphere. He has been dean and professor of pathology since the school was founded in 1925, and much accomplished there has been due to his wise leadership and foresight. The group at Rochester have been leaders in investigative work on protein metabolism. They feel that intravenous plasma protein is utilized in the general protein economy of the body. Recently, they have maintained a dog in nitrogen equilibrium for ninety-two days, during which time the only protein intake was intravenous plasma transfusions. Proteinuria developed after about a month on intravenous feedings, but nonetheless, the animal did not go into a state of negative nitrogen balance. They feel that there probably is a renal threshold value for protein, as is well known for other materials and when this threshold is exceeded proteinuria results. Apparently no organic renal lesions occurred as a result.

Dr. Basset mentioned the use of testosterone to promote nitrogen retention. In addition, it appears to promote water retention. On the other hand, in starvation a decreased excretion of 17-testosteroids has been noted, which may suggest a decreased testosterone formation under those conditions.

Clinically, their interests have been many and varied. Recently, they have gained an experience in doing sympathectomy for hypertension by the transpleural route and seem to prefer it over the other approaches.

Buffalo General Hospital, University of Buffalo, Buffalo

Dr. John Paine, formerly of our own school, recently has assumed the duties of professor of surgery at Buffalo. John is doing a splendid job of reorganizing the service and expanding the laboratory facilities. He has performed successfully the first patent ductus ligation and Blalock operations done in Buffalo. Dr. Paine is well and happy and would like to be remembered to all his friends in this audience.

University of Michigan, Ann Arbor

At Ann Arbor a number of interesting projects are in progress. They have been doing lumbar sympathectomies on a large group of patients with arterial vascular insufficiency of the lower extremities. Their views and findings are quite similar to those of DeBakey in New Orleans related earlier in this paper. In the group of diabetics where the outlook for vascular insufficiency has been exceptionally grim, they have experienced some encouraging results.

They are continuing studies of fluid and electrolyte balance and have also come to appreciate that potassium losses over a period of time may be of sufficient consequence to require replacement.

After a trip such as I have outlined to you this evening, one returns home with mixed feelings. One is full of new ideas, one sees famous institutions and men, one gets to see the surroundings from which so many of the contributions to medical literature and practice arise. I believe that in the future, after such an experience, one will be better able to evaluate these contributions critically and judiciously. Certainly as a result of even a momentary familiarity with their source of origin, articles originating from these institutions will mean much more to the visitor. Such is the value of travel. But it also has another virtue. On gaining a familiarity with distant places having a certain aura of fame and glamour associated with their name, one returns home to experience a sense of contentment and satisfaction with one's own workshop and colleagues.

VOLVULUS OF THE SIGMOID

(Continued from Page 653)

colostomy opening. Later, an anastamosis between these two parts of the sigmoid may be made. This procedure would seem to have some merit.

Recently, two cases of volvulus of the sigmoid colon have been operated upon by me in which there was evidence of minimal gangrene of the bowel. Both patients were in good condition at the time of operation. A primary resection of the gangrenous bowel was performed with end-to-end anastamosis, using a running inner row of 000 chromic catgut and two rows of interrupted 000 silk sutures. The walls of the cut ends of the sigmoid were edematous but were thick and hypertrophied; it was felt that the anastomosis could be safely made. The patients made an uneventful recovery, and both were discharged from the hospital within ten days after the primary resection.

In cases of acute obstructions of the large bowel, it is realized that it is best to decompress the bowel before doing a primary resection. However, in volvulus of the sigmoid colon our experience would indicate that if the patient is in good condition and the colonic distention is not too great, a primary resection and anastamosis of the sigmoid may be carried out successfully.

Comment

It is realized that patients with volvulus of the sigmoid are usually elderly and debilitated, and are poor risks because of this condition. Such patients have been treated in the past by a Mikulicz type of exteriorization resection which, as has been pointed out, entails certain inherent risks. The use of this procedure in this type of obstruction accounts in part for the high operative mortality. The following outline of therapy is suggested:

1. If gangrene at the site of torsion and serious bowel damage can be ruled out, proctoscopy and passage of a tube to deflate the distended sigmoid will be carried out. The tube will be left in site for a few days, after which the volvulus of the sigmoid loop will be resected and an end-to-end anastamosis performed.

2. If the above complications are present or intubation per rectum is not possible, the patient should be explored. Rather than do a Mikulicz exteriorization and resection, the gangrenous bowel will be resected, the distal stump of the sigmoid inverted and buried, and the proximal part brought out as a colostomy opening. If the patient is in good condition, the bowel shows no or slight gangrene, and the distention is not too great, a primary resection with end-to-end anastamosis of the sigmoid may be considered.

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2. Wangensteen, O. H.: Intestinal Obstruction. Second edition. Springfield: Charles C. Thomas, 1947.

Minnesota Academy of Medicine

Meeting of February 12, 1948

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Thursday evening, February 12, 1948. Dinner was served at 7:00 p.m. and the meeting was called to order at 8:00 p.m. by the president, Dr. T. A. Peppard.

There were thirty-three members and three guests present.

Dr. E. M. Hammes read the following Memorial to Dr. Alexander R. Hall, and a motion was carried that this be spread on the records of the Academy and a copy sent to Mrs. Hall.

ALEXANDER RITCHIE HALL, 1874-1947

Alexander Ritchie Hall died suddenly at home Thanksgiving morning, November 27, 1947, while preparing to be host at the family dinner, which he always enjoyed so much. He was seventy-three years old.

Dr. Hall was born April 25, 1874, at Washington, Ontario, Canada, the son of Thomas and Agnes (Bobson) Hall. He attended common and high schools at Washington, St. Catherine and Woodstalk Collegiate Institutions, all in Ontario, Canada.

Dr. Hall was graduated from McGill University Medical School, Montreal, in 1902. He was interned at Montreal General Hospital after which he went to England for postgraduate work qualifying to practice as M.R.C.S. and L.R.C.P. in 1903. He came to Saint Paul in 1904 to enter medical practice with offices in the Moore Building, Seven Corners. He was associated with the late Dr. Arnold Schwyzer for four years, from 1904 to 1908. He was one of the original members of the Miller Clinic, also a captain in the English Army.

He was a member of the Ramsey County Medical Society, the Minnesota State and the American Medical Associations, a Fellow of the American College of Physicians and a member of the Minnesota Academy of Medicine, of which he was president in 1935. His thesis was given on "Status Lymphaticus," December 6, 1911, and his address as retiring president was on "Hypoglycemia." Both papers were published. He was also a member of the Minnesota Society of Internal Medicine, the Saint Paul Clinical Club, Delta Upsilon and Nu Sigma Nu fraternities. He served as chief of "A" Medical Service at Ancker Hospital for many years, with teaching arrangements with the University Medical School, and served as chief of staff in 1933.

Dr. Hall retired from practice about a year ago, having previously suffered a cerebral hemorrhage, but he kept up his visits to Ancker Hospital and was loved for his kindly teachings by many groups of interns who admired him greatly.

Alec Hall enjoyed the outdoors, being an ardent hunter and fisherman, and was most considerate of his friends on these many outings.

Dr. Hall was married in 1928, and his widow, Maude Perry Bowman Hall, survives him, as do a brother, Oliver Hall, and a sister, Dr. Jean Hall, both of Canada.

Dr. Hall was a kindly gentleman, a fine friend and an able physician. The following precept, attributed to the American Quaker, Stephan Grellet, certainly could have been his:

"I shall pass through this world but once; any good thing therefore that I can do or any kindness that I can show any human being, let me do it now. Let me not defer or neglect it for I shall not pass this way again."

His passing leaves a definite memory of such a man.

(Signed) E. V. Goltz, *Chairman*
Carl B. Drake
J. Felton Hammond
E. V. Kenefick
E. M. Hammes.

The scientific program followed.

Dr. Moses Barron read a paper on "Streptomycin in Tuberculosis." Two cases were reported, and one of the patients was presented at the meeting.

STREPTOMYCIN AND TUBERCULOSIS

MOSES BARRON, M.D.
Minneapolis, Minnesota

When Dr. Waksman and his associates discovered streptomycin, they gave to the world the first drug which has proved capable of altering the course of human tuberculosis. They found that this antibiotic was also effective against many Gram-negative bacteria. In a large series of cases treated with streptomycin, satisfactory results were obtained in the treatment of (1) urinary infections and infections with bacillus coli, proteus, pyocyaneous, and Friedlander's bacillus, (2) influenzal meningitis, (3) tularemia, (4) brucellosis, and (5) a miscellaneous group. Its effectiveness in many of the above infections has proven to be as great as that of penicillin in the pneumonias.

About a year after its discovery, Drs. Hinshaw and Feldman of the Mayo Clinic reported that streptomycin had a strong suppressing effect on tuberculosis, both of animals and of humans. It has proved effective in peritonitis following ruptured appendices or other ruptured viscera. One of the difficulties encountered with streptomycin is the early development of bacterial resistance to the drug, especially in tuberculosis. Its effect on tuberculous infections is at times very dramatic, especially in the acute hematogenous and exudative types. Very favorable results have been obtained in from 10 to 20 per cent of cases of tuberculous meningitis. Chron-

ic fibrocaseous types of pulmonary tuberculosis with cavitation do not respond. Resistant strains seem to appear in from four to eight weeks following the onset of the treatment. Toxic effects are usually mild in short courses of treatment, but in prolonged courses the more serious of these is the development of vestibular dysfunction, with vertigo, dizziness, and on occasions even deafness. This toxic effect occurs mostly from the use of large doses of from 2 to 4 grams daily over periods longer than three or four weeks. The vertigo may persist indefinitely, and when recovery occurs it is usually through some compensatory mechanism. The second rather severe complication is nephropathy. This may proceed to renal insufficiency. However, the renal damage which develops in about 3 per cent of the cases treated seems to be reversible, and usually goes on to healing and complete restitution after discontinuance of the drug. Streptomycin seems to be of little or no value in virus infections. In many cases of pulmonary tuberculosis the beneficial results are very striking. The sedimentation rate is decreased, positive sputa are converted into negative ones, fever is lowered or abolished, and the cough is reduced and often stopped. There may be a progressive gain in weight. Recent experience has shown that a dosage of 1 gram a day is just as effective as the larger doses previously used, and at the same time toxic effects are almost eliminated. It must be borne in mind that it is too early to claim cures of tuberculosis with streptomycin, no matter how good the results may be. We can only state that the cases treated have been arrested, and that the results seem better than with the methods previously used. However, the old routine of rest, diet and pneumothorax is still necessary in the management of most cases of tuberculosis.

I have had the opportunity of studying two cases of tuberculous peritonitis which have responded exceedingly well to streptomycin.

Case 1.—Mrs. N. J., aged thirty-nine, was admitted to the Asbury Hospital on October 17, 1946, with complaints of abdominal distention of about two months' duration and obstruction of the bowels of about two weeks' duration. During the previous month she had had fever, dyspnea, anorexia, malaise and insomnia.

Past History.—At the age of twenty-one she became sick with what was diagnosed pneumonia. She developed a pleurisy in the right chest. This was aspirated, and tubercle bacilli were found in the fluid. She made a complete recovery from the infection except that the right chest gradually seemed to shrink and became quite flat. She became entirely well and remained well up to the present illness. At no time did she have any cough. About October 5, 1946, she developed pain in both legs, as well as in the elbows and knees; her fever at times rose to 102°, and the abdomen slowly swelled. She developed progressive dyspnea. From about October 10 on, she became practically bedridden because of weakness and shortness of breath. She became markedly bloated and had pains and tenderness in the abdomen. She was sent to the Asbury Hospital by her doctor on October 17, 1946, with a diagnosis of intestinal obstruction.

Physical Examination.—The patient was very uncomfortable because of shortness of breath and tightness of the abdomen. Temperature was 102.6°, pulse 125, respirations 28 to 30; the blood showed hemoglobin 97 per cent, white blood cells, 7,700; and the urine showed a trace of albumin, a few pus and red blood cells. Blood cultures were negative. On examination, the right chest was greatly retracted, flat, and immobile; numerous loud coarse râles were present throughout the right chest, and breath tones were very distant. The left chest was entirely negative. A diagnosis of chronic adhesive tuberculous pleuritis and tuberculous peritonitis was made.

Paracentesis of the abdomen yielded 2,000 c.c. of a turbid light brown fluid. It showed 890 cells per cubic centimeter with 76 per cent mononuclears, 24 per cent polymorphonuclears, and there were 4.3 grams protein per liter. No tubercle bacilli were found. An x-ray of the chest showed extensive thickening of the pleura of the entire right chest; the left lung was entirely clear.

The patient at first was placed on 30,000 units of penicillin and 5 grams of sulfadiazine daily. On October 19 this was discontinued, and she was placed on 200,000 units of streptomycin every three hours. On November 15 this was increased to 250,000 units every four hours. From then on there seemed to be progressive improvement. The remaining fluid in the peritoneal cavity cleared completely, she felt stronger and her temperature receded to about normal. On November 26 she began sitting up at the side of the bed. She began noticing vertigo and was given niacin and benedryl. Temperature dropped down to normal and remained so for several weeks before discharge. Pulse ranged between 70 and 100. Dr. Wesley Spink of the University was called in consultation, and he corroborated the diagnosis and concurred with the treatment. She left the hospital on December 18, 1946.

Not long after returning home, she noticed that the abdomen had begun to enlarge again and the temperature had begun to rise. She was readmitted to the hospital on February 15, 1947, with a temperature of 101.6°. She was now given 375,000 units of streptomycin every three hours. This was later changed to 500,000 units every four hours. She promptly began to improve, and the fluid slowly disappeared from the peritoneal cavity without aspiration. The temperature also started to decline. After March 8 it did not exceed 99°. After April 13 for several days it again reached about 100°, but after May it did not rise above 99.6°. Her pulse was 90 to 110, and general condition was excellent. The patient was discharged May 16. This time on discharge the vertigo was quite pronounced. She would sway from side to side in walking and would have to hold on to something. Gradually this left her, but she is still somewhat dizzy and at times a little uncertain in her gait. There has been no recurrence of the peritonitis. The abdomen is soft, not tender, and appears entirely normal. When last seen, December 22, 1947, she seemed to be in good physical condition.

Case 2.—Mr. E. B., aged fifty-seven, was first seen September 25, 1947. He complained of gas and belching of about a year's duration, some dysuria, some alternating constipation and diarrhea for about a year, progressive weakness, pain and tenderness in the abdomen, and swelling of both legs.

Physical examination showed him to be 5 feet, 7½ inches tall, weighing 133 pounds. Blood pressure was 114/70; the heart seemed normal, with tones of good quality, the abdomen was somewhat distended, tympanitic and tender throughout, especially at the right lower quadrant. A small tender mass in the region of the cecum was felt. The tenderness had been increasing the previous six weeks. The right testicle was atrophied and there was edema of both legs from the knees down. The urine was negative. Hemoglo-

Fig. 1 (Case 2). Photomicrograph of a section of peritoneum. The endothelial surface is above. Note the closely approximated tubercles containing large giant cells.

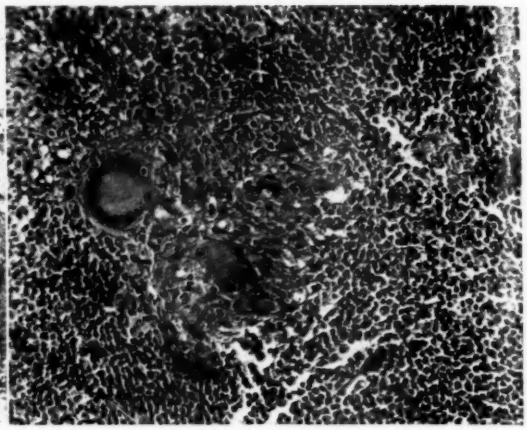

Fig. 2 (Case 2). A tubercle in a lymph node shows a nest of epithelioid cells and two giant cells.

bin was 75 per cent, white blood cells 7,200. An x-ray of the chest showed the heart not enlarged; the lungs showed a hard, dense shadow at the right apex mesially. The x-ray diagnosis was an arrested fibrous tuberculosis of the right upper lobe. The electrocardiogram was negative. Because of the abdominal discomfort, gastrointestinal x-ray studies were ordered. These were reported as showing extensive massive carcinoma involving the proximal half of the stomach. X-ray of the colon also showed a definite deformity of the cecum, rather extensive, with changes extending into the terminal ileum. This suggested a diagnosis of tuberculosis of the cecum and terminal ileum.

The patient was admitted to the Asbury Hospital on October 6, 1947. He was given several transfusions preparatory to operation. A laparotomy was done by Dr. Maxeiner on October 20. The findings were very surprising as well as striking. The entire peritoneum, both visceral and parietal, was studded with myriads of tubercles 1 to 2 millimeters in diameter. The stomach, omentum and mesentery were completely covered with tubercles, but there was no evidence of a neoplasm in the stomach. The cecum showed an indurated mass, probably inflammatory. Small pieces of tissue from the peritoneum and several lymph nodes were removed for microscopic study. Microscopically they showed an active type of miliary tuberculosis with areas of necrosis and large giant cells (Figs. 1 and 2). Temperature on admission was 100°, which rose to 102° and then fluctuated, reaching 103.6 following the operation. On October 26 streptomycin was started, 400,000 units intramuscularly every eight hours. On November 7 his weight was 113 and on November 29 it was 123 pounds. His blood showed 77 per cent hemoglobin, 7,800 white blood cells.

He improved very rapidly, so that a re-ray of the stomach, December 15, showed an absence of the deformity which had been diagnosed carcinoma in the previous gastrointestinal study. The cecum still showed deformity. He started getting up and around, was gaining in weight and in strength, and he left the hospital, December 24, feeling quite well. The tenderness of the abdomen had completely disappeared, and the mass at the cecum had also cleared. Pulse was 66, blood pressure normal. When last seen on February 11, 1948, he was feeling entirely well, had no complaints, was up and around and had a very good appetite. The abdomen appeared entirely normal.

Discussion

These two patients present a complete change of prognosis in cases of advanced tuberculous peritonitis. The disease in both cases has been definitely arrested. As to whether this will remain permanent or not, only the future will tell. However, the discovery of streptomycin has definitely altered the outlook and the course in a large variety of infections, including those caused by Gram-negative bacteria, but especially in certain types of tuberculosis. The literature presents an increasing number of articles dealing with the excellent results obtained in the use of streptomycin in tuberculosis as well as in other infectious diseases.

Discussion

DR. WILLIAM B. TUCKER: This is very much the tail that is *not* going to wag the dog. Dr. Barron has so far very well covered the whole problem of the treatment of various tuberculous conditions with streptomycin. All that streptomycin has done for us is to *aid* in curing tuberculosis. The action of the drug is suppressive at best, and it still remains for resistance of the body to overcome the disease. The probable mechanism of action of streptomycin on tubercle bacilli is related to the problem of bacterial resistance. Apparently streptomycin is bacteriostatic. Tubercle bacilli divide by fission and increase in size, and only when they have attained a certain size do they appear to be capable of reproduction. The action of streptomycin seems to be suppression of growth and reproduction, not killing. It has now been established that not all tubercle bacilli are suppressed by streptomycin. Probably all populations of tubercle bacilli initially contain a small percentage of bacilli which are resistant to streptomycin, but the action of streptomycin is greater on the vast majority of tubercle bacilli in the population which are sensitive, and gradually over a period of time those that are not resistant are suppressed, but the others keep on growing and reproducing. Finally the initial percentage is reversed, a few may still be sensitive, but the vastly higher percentage is resistant.

As in all chemotherapy, one has to take into account the ratio between therapeutic dosage and that causing toxicity. Where the range between the two is high we have little difficulty. Such is not the case with strep-

TABLE I. DEVELOPMENT OF RESISTANCE TO STREPTOMYCIN

Percentage of organisms resistant to 10 mcgm./c.c. or more.

	2gm./day	1 gm./day
After 60 days treatment	35	33
After 90 days treatment	70	74
After 120 days treatment	83	96

TABLE II. INCIDENCE OF TOXICITY

Percentage of patients manifesting toxic reactions.

	2 gms./day in 5 doses	1 gm./day in 2 doses
Vertigo	92	17
Diminished caloric stimulation	77	12
Eosinophilia (over 4%)	70	22
Renal irritation	67	16
Impairment, renal function	1	0
Gastrointestinal disturbances	10	6
Paresthesia	3	4
Deafness	1	0
Fever	8	5
Dermatitis (mild)	18	0
Leukopenia	2	0
Treatment stopped or interrupted because of toxicity	8	3

This last statement is demonstrated from the figures given in Table I.

Allowing for the size of samples, there is no significant difference in the rate of development of resistance to streptomycin on the two dosage regimens.

The point made earlier, as to the reduction in the incidence of toxic manifestations on the smaller daily doses, is illustrated in Table II.

There can be no question as to the significance of the reduction of incidence of toxic reactions on the 1 gm./day as compared with the 2 gm./day regimen. It is entirely probable that as still smaller doses are explored, still further reductions in toxicity will be made possible.

Enough experience has now been accumulated to know in what tuberculous conditions streptomycin is most effective, moderately effective, or least effective. The experience at the Minneapolis Veterans Administration Hospital is best summarized in Table III.

The conditions have been listed in approximately the rank of the decreasing effect of streptomycin with respect to improvement of the condition.

That these results are not atypical, Table IV is presented to indicate how closely the results here correspond to the over-all experience of the other Veterans Administration Streptomycin Study Units.

TABLE III. RESULTS OF STREPTOMYCIN THERAPY ON TUBERCULOSIS IN THE MINNEAPOLIS VA HOSPITAL

Treatment-completed cases only

	Healed	Improved	Unchanged	Worse	Total	Died
1. Glandular	4	1			5	
2. Alimentary Tract	2	2			4	
3. Sinuses-Fistulas	4	2	1		7	1
4. Laryngeal	3	5	2		10	1
5. Tracheobronchial		5	1		6	
6. Skin-Pericardial		2			2	
7. Genito-urinary	1	4	4	1	10	
8. Empyema		1	1		2	1
9. Pulmonary		10	2	7	19	6
10. Bone and Joint		1		1	2	
11. Miliary-Meningeal	1	1		3	5	3
Totals	15	34	11	12	72	12

tomycin. One great difficulty in the use of streptomycin has been to find a therapeutically effective dose which will avoid the complications of toxicity.

The Veterans Administration has twenty-one hospitals throughout the country which have been co-operating with the army and the navy, and these hospitals have had an unparalleled opportunity for making a study of these problems. The Minneapolis Veterans Administration Hospital began its share in the study just a year ago yesterday when we treated our first patient. The Veterans Administration Streptomycin Study Program as a whole has treated over 1,000 patients and we have learned the following, very briefly:

1. It is not necessary to treat with as high doses as originally thought, as Dr. Barron has indicated. We are in the process of studying even smaller doses, and maybe 0.5 gram, or even 0.2 gram a day, is as effective as 1 gram.

2. We have also learned that it is not necessary to give numerous injections every day. We are now using two doses a day, but there may be no reason why we should not give it every other day or once a week. The probable explanation for this is related to the life cycle of the tubercle bacilli.

3. Another point clarified has been the relation of toxicity to dosage. On 1 gram a day the toxic manifestations of earlier larger doses have been largely eliminated.

4. We still have not avoided the other horn of the dilemma—the development of resistance to streptomycin on the part of some tubercle bacilli. The rate of development of bacterial resistance is probably as rapid with smaller as with larger doses.

TABLE IV. APPROXIMATE RANK OF EFFECTIVENESS OF STREPTOMYCIN IN VARIOUS TUBERCULOUS CONDITIONS

Type of Tuberculosis	20 V.A. Study Units	Minneapolis
Group A: Effective (85%-90% Improvement)		
Sinuses and Fistulae	1	3
Alimentary Tract (Mouth, Intestinal, etc.)	2	2
Laryngeal	3	4
Tracheobronchial	4	5
Glandular	5	1
Group B: Moderately Effective (60%-80% Impr.)		
Genito-Urinary	6	7
"Rare Medical" (Skin, Serous, Iritis, etc.)	7	6
Empyema	8	8
Pulmonary	9	9
Group C: Limitedly Effective (30%-45% Impr.)		
Bone and Joint	10	10
Miliary and Meningeal	11	11

In summary, then, we have learned a great deal about the relative degrees of effectiveness of streptomycin in various tuberculous conditions, and have found 1 gm./day an effective dose, and one which appreciably reduces the incidence of various toxic manifestations. There still remains the serious problem of the development of bacterial resistance to streptomycin. The period of most rapid development of resistance may be as early as between forty-five and sixty days. And the development of resistance to streptomycin is probably largely an irreversible phenomenon. It behooves us, in considering streptomycin therapy of a tuberculous condition, therefore, constantly to keep in mind the pos-

sibility of the development of resistance. If it does develop, and is an irreversible phenomenon streptomycin therapy in tuberculosis must be looked upon largely as a gun containing only one shot. We need to hold back and not use streptomycin prematurely or unwisely. We probably have few opportunities (possibly only one in the majority of cases) to use it in the treatment of tuberculosis, and we must keep this fact in mind when contemplating streptomycin therapy.

In closing, may I again express appreciation of the opportunity to hear and to discuss Dr. Barron's excellent presentation, not only of his two cases of tuberculosis peritonitis so well treated, but of his treatment of the problem of streptomycin therapy in tuberculosis, as a whole.

Dr. Russell H. Frost: I am grateful for the opportunity of attending this meeting and of discussing briefly Dr. Barron's most interesting and effective presentation. As a matter of fact, not a great deal in the way of discussion is possible, for the reason that Dr. Barron's own experience in treating two cases of tuberculous peritonitis with streptomycin is probably more extensive than that of most of us here.

Until the advent of streptomycin, the treatment of this condition was far from satisfactory in spite of the fact that many cases—particularly of the so-called serofibrinous type in their earlier stages—did respond slowly to prolonged bed rest and eventually made more or less complete recoveries. In too many others, masses developed which became caseous, sometimes with the formation of abscesses and fistulas or sinuses, and occasionally with the development of intestinal obstruction. Dissemination of the tuberculous process, leading to death, occurred not infrequently.

While it is much too early, of course, to say that streptomycin has solved the problem of the treatment of tuberculous peritonitis—or of any other type of tuberculous disease—there can be no doubt that in the relatively early cases in which marked tissue changes have not yet developed—and I have seen two such cases and know of some eight or nine others—we have in streptomycin a drug which frequently or even usually produces a startling and dramatic improvement in both the patient's local and general condition, sometimes within a few days. No case, to my knowledge, has been followed long enough to be certain that the process has been permanently arrested. As one bit of evidence, I know of two individuals who had peritoneal biopsies both before and after streptomycin therapy, the initial biopsy revealing unquestioned widespread tuberculosis, and the posttreatment biopsy a normal peritoneum, both grossly and microscopically. On the other side of the coin there is the patient with tuberculous peritonitis who developed tuberculous meningitis and who was treated with streptomycin by Hinshaw in 1946, with apparent control of both processes. This patient recently returned to the Minneapolis Veterans Administration Hospital with a large, firm, nontender mass (the size of an orange) in the right side of his abdomen. This was felt to be a tuberculous mass (rolled-up omentum?) by all who saw him. This mass "pointed" and appeared to be about to open and drain spontaneously through the anterior abdominal wall when, gradually and without treatment of any kind, the process reversed itself and the mass disappeared over a six- to eight-week period. In for a check-up last week, the patient had an apparently normal belly and seemed to be perfectly well. Both he and Dr. Barron's cases should be interesting and instructive to follow.

My congratulations to Dr. Barron for his splendid report.

Dr. Ralph Creighton then read his inaugural thesis on "Military Medicine Needs the Medical Profession."

MILITARY MEDICINE NEEDS THE MEDICAL PROFESSION

RALPH CREIGHTON, M.D.

Minneapolis, Minnesota

This may appear to be an odd subject on which to base a thesis for a scientific group; yet it is a medical subject because it deals with medical men and their efforts to render medical service. I believe it is a timely and important subject, particularly now when our world is in a state of jealous ferment. This paper is about doctors, like you and me, who are suddenly transferred to a strange environment, at a time of great emotional strain. Here they are called upon to perform many unusual duties in addition to, or in place of, the familiar one of caring for sick or injured humanity. They are expected to perform these duties in the midst of great confusion, unsatisfactory conditions, many times while in great personal danger, and too many times to the accompaniment of caustic criticism from those who have made military medicine a profession and should know better.

I ask you to consider with me the situations faced by the temporary medical officer of the last war, and, in the light of his experiences, to see that it is important that you, the medical profession, should interest yourselves in the problems he faced. You must see the importance of lending your interest and influence to the end that the temporary medical officers of future wars shall be able to serve more efficiently and shall not be subject to some of the practices that greatly impaired their morale and efficiency in the national emergency just passed. By interesting yourselves in this reasonable criticism of the service, you can help the Surgeon General to develop a finer medical service in the event of a future sudden emergency. This is the time to study these problems and plan for the future. We hope that these plans may never be used, but just for once let us have our plans matured and firm before war is upon us, rather than throw them together hastily after war has struck. Let us gather together the knowledge gained by those who served last time and, with that as a basis, offer certain constructive criticism to the Surgeon General. I believe he would welcome the interested and forceful help of organized medicine. God forbid that we should enter another emergency making the same old mistakes over again; this method is said by some to be the approved army method.

Medical men who served in the last war were so hypercritical of the treatment accorded them in that war that a national committee has been appointed to consider their complaints with a view to improving their status in the event of another war. The American Medical Association sent a comprehensive questionnaire to all doctors who served in the forces. An analysis of this questionnaire has been made by Dr. Frank Dickinson, and the results of his analysis are most illuminating. I shall refer to them later. You have all heard strange tales of the misuse of medical men, of the waste

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Inaugural thesis.

of their professional skills, of discrimination and lack of promotions. You have heard that the services called for and absorbed far more medical men than they could use. We cannot be too critical of this, for the army was using the long view and, had the war continued, this pool of men would probably have been used.

As a direct result of this critical attitude of men who have served, insufficient numbers of doctors are joining the Medical Reserve Corps. The National Guard of Minnesota has recently been reactivated. They have been authorized to form a complete infantry division, including, of course, a medical battalion, air services, and certain other auxiliary services, among them anti-aircraft artillery. These units are well on their way to completion except for one factor. They have no medical service. At the present time only three or four doctors have taken commissions in these National Guard units. They are badly in need of medical officers of both company and field grade. This is a serious situation for the National Guard. I have tried to interest several younger men, calling attention to the added advantage of pay. None of the younger men are interested; certainly none who have been in service. Why? Certainly not because they are not willing to serve their country in time of emergency. Why are they not willing to help prepare for an emergency that we hope will never arise? Something unpleasant, deeply unpleasant, has soured our doctors on the services. The medical profession must find out what is wrong and why they feel that way. They must show the Surgeon General the reasons why doctors were dissatisfied with the service, and try to bring about certain changes in the army system.

I have been amazed at how little the civilian, including the medical profession, knows about the assignments that may be given to a doctor in the service. Usually they seem to picture him as carrying on his usual daily routine, the only change being a new environment and a uniform, as though he really had only started to do his work at a different hospital where all the patients were soldiers. People have looked at me with doubt and surprise when I have told them that I never served in a hospital, that all my service had been with troops. How could such things happen to a doctor? Did they really have doctors right with the soldiers? Weren't they all back somewhere in a hospital? The answer, of course, is that there were doctors like you and me who lived and served and went through combat with the line units; yes, and many of those doctors died with them. They served with the infantry, the artillery, the airborne forces, the paratroops, and the tanks. They had no hospitals and they did no hospital work, and, perforce, practiced a sort of educated backwoods primitive medicine and surgery. They were largely isolated from other medical men for periods of time. They had no medical books and, owing to the exigencies of the service, rarely got a medical journal. They went on and on in a monotonous oblivion of poor food and water, dirt, danger, and unending hours of caring for badly injured men. As time went on, they realized that the only relief they probably would ever get would be through the laws of attrition, and that rotation home or to a back area hospital service was a pleasant mirage —like promotion. They learned that once assigned to duty with a line unit, they would probably stay there for the duration. They did have the advantages of belonging to a unit that had considerable *esprit de corps* and had the pride of being a member of that unit. You may have noticed how proud men were of the shoulder patch they wore, and how they looked down on the man who wore the patch of a less spectacular unit. A doctor who served with the 82nd Airborne, or the 36th Division, was proud of his unit, in spite of all the troubles he had. That was the greatest satisfaction he had—he had been there!

May I quote a few items that I have taken from Dr. Dickinson's analysis of the AMA questionnaire?

1. 38.7 per cent of the medical officers in the army had been in general practice, 27.7 per cent were classified as specialists (17.6 per cent were board-certified), the remaining 33.6 per cent were interns or residents on induction to the service.

2. 48.7 per cent of the medical officers in the army never attained a rank higher than captain, and 79 per cent never attained a rank higher than major.

3. The average base pay of the temporary medical officers in our army was $2,826 a year.

4. 23.3 per cent of the doctors in the army served with tactical units.

Our civilian medical officer left with his division for a southern training camp, which he found to be in a God forsaken part of the country. It was partially completed and partially equipped—and alternately knee-deep in mud or baking in the dusty heat. He was now a regimental or battalion surgeon with the infantry or artillery. He found himself holding sick call, going on hikes, and living that healthful outdoor life. He taught first aid to his medical detachment, hoping some of them would be bright enough to remember part of it should the need ever arise. For some reason or other, the personnel section of the army would send all the bright boys to the artillery, engineers or infantry, and figure the dubs were good enough for the medical corps. He trained his men in map reading, in orienting themselves at night, in caring for themselves and their equipment, and how to care for and evacuate wounded under any and all conditions. He went on endless maneuvers. He inspected an endless number of latrines, mess halls, quarters, feet and genitals. To his surprise, he also discovered that the line officers with whom he was in daily contact did not think he or his medical detachment were of any great importance—a nuisance, rather. Later they would change their minds—but no one knew that yet! He also would receive unexpected calls from the regular army medical officers, who would inspect him, his detachment, and his knowledge of things military. Few of them ever seemed to want to help him with his new job, rather, they would make caustic complaints about his ignorance of the army and hope that some time these new officers would learn how to do things right. Never an effort on their part to sit down with a fellow doctor and say, "Here I am, a regular, and know

how to do these things; and I have come over to show you how so we will have a better medical corps." No, never that! These occasional visits became nightmares at times. Suddenly came the news of Pearl Harbor, and a few weeks later our doctor was on the way overseas, still struggling to become an army officer and to do his job the way the army seemed to want it done.

The commanding officer of a line organization is solely responsible for everything that his unit needs or does. He and not the medical officer is responsible for the health of the command. There are sound tactical and administrative reasons for this apparent anomaly. The well-trained line officer will usually let his medical officer run his own show without interference, but there are exceptions in line officers in this respect. The medical officer has certain prescribed duties detailed in army regulations. In addition, he is expected to advise his commanding officer in matters pertaining to the health of the command. This advice may be accepted in part or in total, or may be ignored, for the commanding officer is the party responsible for the results. He may, of course, be condemned by higher authority for not following the advice of his medical officer. So, a medical officer may make an inspection and find many things wrong which may affect the health of the command, but without the backing of his commanding officer, he lacks power of command to force delinquents to comply with regulations. The commanding officer may be intelligent, co-operative, and deeply interested in the health of his command—and most of them were. On the other hand, he may be stubborn, stiff-necked and hard-boiled, glorying in making things tough for himself and his men, he may even be a Christian Scientist or other cultist. I have heard some of these men deny the possible existence of psychosomatic conditions, deny that men may crack up under long days of combat, fatigue, and poor food. He doesn't think battle fatigue exists. He classifies all such cases as "yellow bellies," and wants them all tried by court martial. Even the most patient medical officer of any level—from regiment up to corps or army—may want to throw in his hand if he has a C. O. of this type.

I do not want to give the impression that all line officers were un-co-operative with medical officers. Most of them were grand chaps who thought their surgeon was the best ever and were completely with him in all he tried to do. I do feel, however, they could have been given a better understanding of the importance of a medical opinion. After all, a doctor is a pretty well educated man and smart enough not to underestimate the importance of the tactical situation or the theory of chain of command. I still believe the West Point graduate was the worst offender. Most of the reserve officers and Guard officers had had a family doctor back home whom they always had considered as being a pretty smart man, an important man in their community, a man whose opinion was worth considering. The West Pointer is well trained, pleasant, affable usually, and knows all there is to know about everything. He has a rather cavalier attitude towards the medical man, treats him like a harmless and rather simple child who could not possibly understand the profound thoughts of a military mind. I believe this attitude starts on the highest levels in the war department and is practiced on the Surgeon General just as much as a regimental or battalion commander may practice it on his surgeon.

Getting a replacement medical officer for duty with a combat unit was a major operation, and here was where we began to see where medical personnel were wasted. There were always plenty of medical officers in the replacement depots of the base sections doing nonmedical duties and anxious for a permanent assignment to duty, even as a medical officer in a combat outfit. By some quirk of army administration, it was very hard to pry these men out of the base section replacement depots. When at last they came to us, they told us strange stories of misuse of medical officers. They told us of large numbers of medical officers who remained in the replacement depots of the base sections in North Africa and the Peninsular Base Section in Italy, who were unassigned. They were doing military police duty. They were roaming the streets of Naples, checking to see whether combat troops sent back to the rest areas were wearing their dog tags, or watching to see that they saluted base section officers with the proper snap. They were even learning how to take down and re-assemble a machine gun while blindfolded. Their time was occupied by these and other WPA projects. Base section commanders liked to carry a large roster and were loath to part with these men even if they couldn't put them to proper use. The answer? Once again, a personnel policy in the Surgeon General's department that would see that proper use was made of medical personnel. The medical profession, with its organization, could help correct this abuse.

Military training is a wide gap that the newly inducted medical officer must face. If he were properly briefed by the service on entrance, he would realize its importance to him and to the men with whom he must serve. Proper and adequate orientation on the objectives of training would have produced far-reaching beneficial results. I feel that the regular army fell down badly on this opportunity. Let's make sure that opportunity is not missed next time. Military training should be the process by which a civilian doctor is transformed into an officer of the Army of the United States; a medical officer, it is true, but still an officer with certain duties and responsibilities by virtue of that fact. A doctor cannot enter the army and remain just a doctor; by reason of his rank he must assume another status as well. This transition from civilian doctor to army officer is hard for many to take and causes much unhappiness and misunderstanding. There are many who refuse to accept the officer responsibility but who are willing to accept officer privilege; in fact, they are very jealous of it. Of all the professions, the doctor is perhaps the greatest individualist. It is difficult to convert him to regimentation; and regimentation is very necessary in a military organization. This hostility toward accepting officer responsibility on the part of temporary medical officers was the source of much impatience and criticism from the officers of the regular army. They failed to understand that a newcomer couldn't grasp, on a minute's notice, certain obligations

in which they had had a lifetime of training. Their failure to understand this situation gave them, the regulars, a feeling of frustration and they tended to take it out on the newcomers. As a result, many of them offered training the hard way. A proper orientation course by the regular army, on induction, offered with patience and understanding, would have been gratefully received by these neophytes. All they wanted to know, to start with, was what was expected of them. Do you remember how you felt the first time you appeared on the ward as a very junior intern?

Many of these freshmen medical officers bitterly objected to field training under simulated battle conditions. "What a silly thing to make doctors go through," said they. Later they had cause to wish they had given more effort to learning field duties. There were some unregenerates who never would conform. They should have been reclassified then, for their own good and for the good of enlisted men who later had to serve with them, for many of these enlisted men were contaminated with the same ideas of nonconformism. For the most part, the new medical officer was an earnest soul, an eager beaver, anxious to do a good job if only some one who knew would tell him what that job consisted of in all its parts, and in terms he was familiar with. Like a true scientist, he wanted to know "why" the army did things the way they did, and not just accept them without question. This attitude the regular army instructors did not try to understand. As to why the army did some of the things the way they did, as yet there has been no answer.

I would further offer a criticism of the regular army in the type of training offered and in its selection of officers to conduct that training. In the event of another national emergency, they will do well to select teachers who are not so removed from the professional plane, who have understanding and a true willingness to help convert the doctor into an army officer. We saw too much of the impatient, supercilious, hypercritical type. At times I had the feeling that the regular army officer viewed the new temporary officer through the warped screen of a subconscious inferiority complex. He saw the well-trained, successful medical practitioner that he might have been had he not entered the army. As a result, I believe some of them took their resentment out in making the inexperienced officer ridiculous. This pose affected by many of the regular service was most bitterly resented, and it was a common practice not only in training but afterwards. It was after a session with one of these martinets that we would wonder: why hasn't the medical profession let its interest and well-wishes follow us into service and help control some of these military morons?

It is my contention that all medical officers should have basic field training, regardless of grade and probable future assignment. No one in the service knows what the future may bring in the way of duty. Unless changes are made in the assignment of personnel, no matter how well a doctor is trained, no matter what his age or physical condition, he may wind up with combat troops. Then he has only regrets that he had no field training. This happened to many whose age and professional attainments should have placed them elsewhere. A medic assigned to a combat outfit has a tough time at best, but a much worse time if he is not trained for it.

During the early rough days in Northern Africa, a replacement medical officer reported for duty. His only duty had been in a state-side station hospital, and he had requested overseas duty. He had never had service with troops and had no field training. It was necessary to send him up as a battalion surgeon to an infantry regiment that was heavily engaged. He admitted he had no idea of what his duties would be and no idea of the organization of an infantry medical detachment. He was plunged at once into heavy fighting at a time when the Germans had first started to use their 88's to good advantage. This man took one look at his new assignment, crawled into a foxhole and stayed there for the next forty-eight hours. He was relieved of duty, charged with misbehavior in the face of the enemy, and sent back in disgrace. Was he really a coward, or was he the victim of lack of training and experience? Was he to blame, or was some one else to blame?

The training offered to new medical officers at the Medical Department Field Training School at Carlisle Barracks was at times impractical, inadequate and unrealistic. It was often conducted by men who had little or no practical field experience in the things they taught. Few on the faculty had extensive combat or field background. Many of their graduates had to be completely "untaught" the things they had learned at Carlisle. This was particularly true of field sanitation. We found that modern warfare presented new problems in field sanitation that were not answered in the field manuals, but Carlisle stuck to the field manuals. The teaching of army paper work was uninspired and made drudgery. It *was* drudgery, and could have been simplified for field purposes. This was contemplated, but never quite done. However, no apparent effort was made to explain to these men the importance of the various documents, voluminous and repetitious as they were. As a result, men came overseas with a disrespect for the records they were required to make. On these records depended many statistics of importance, and many records that would, in later years, be the basis for claims against the government.

To touch again on the attitude of the regular army instructor toward the trainees at Carlisle Barracks, this I have heard from the instructors themselves, and I have heard them laugh about it; It was an attitude of "be tough, be arbitrary, make them feel ridiculous, make them 'take it and like it'." Some of them felt it was good technique to haze these trainees for all the world as though they were college freshmen. Now these trainees were doctors like yourselves. Would you have liked it? Would you have resented it? These trainees came to the school to be taught how to do a job by men who presumably knew how. What was still more unfortunate, some of these trainees later aped their instructors, and they themselves became the obnoxious, difficult type of officer you read about later in the newspapers.

The status of the medical officer in relation to the line officer should be overhauled and clarified in the future. I believe this should be done from the Surgeon

General's office right down to the lowest echelon that rates a medical officer. I believe the Surgeon General has had as much trouble putting his ideas across as the battalion surgeon, because of the all-wise line officer or the even wiser supply officer or G-4. It is only a difference of level. Also, the surgeon is generally outranked and has no command function.

Once again let me reiterate, I have no quarrel with the army system of chain of command, nor with the fixing of responsibility on commanding officers of all ranks. These systems are well tried, are practical, and necessary to a unified and smooth working military unit.

I firmly believe that a strengthening of the status of the medical officers of all grades in their relationship to line officers would improve morale and increase the efficiency of the Medical Department. The medic does not enjoy being treated like a step-child. Organized medicine could help considerably in raising the status of the medical officer as an important, intelligent, and trained part of the army. It could help immeasurably by interesting itself in the problems of organization and training faced by the Surgeon General—not by finding fault with his department but by backing him up as an important and honored member of our profession. We should make every effort to include medical officers in our meetings. As a profession, we must take an active interest and actively support the medical service of our armed forces. Rank, pay, and promotion enter the picture, too, in strengthening the status of the medical officer. Considering his attainments, educational background, professional ability and standing in his community, the medical officer is the most underpaid, underranked, and underprivileged officer in the service. He has much to give, but at times has a hard time giving it.

We, as a professional group, can also give aid to the Surgeon General in establishing a satisfactory personnel policy. Our own navy had a better one; so did the British. The army personnel policy, if they ever had one, never seemed to be workable or understandable. It also had a way of being diluted and modified as it passed through successively lower echelons from the Pentagon Building down. Certainly it could be and often was manipulated for personal considerations. There are enough former medical officers in the AMA at the present time who have enough military background and interest to help the Surgeon General in formulating personnel policies that would be fair, workable, and considerate. A policy that would see that duty assignments were made commensurate with age, experience, training and physical condition. The policy could set up a workable arrangement by which medical officers could be rotated within the service, between field service and hospital installations. Men should not be required to serve out the duration in combat units while they gradually lose their professional skills. The policy should also work out a fair and workable plan for rotation home after a certain length of overseas service. In the last war, many men spent all their time in the states and apparently were quite certain, for some reason or other, that they were not going overseas. On my return home from overseas after nearly three years, I saw many hospitals where most of the staff had not been overseas, nor did they expect to go. They were living comfortably and safely with their families. A good personnel policy would equalize these duty assignments.

I fully and firmly believe that the Surgeon General's office would welcome the interested co-operation of the medical profession on these problems if properly approached. We are not trying merely to be critical or vindictive, but want to help build a forward-looking plan that will eliminate some of the ills of the past which undermined efficiency. We want to do this through organized medicine as a gesture of help to other members of the group who have a big and difficult job to do. Certainly we must be able to show to the Medical Department that a policy by which officers assigned to combat units were frozen was a poor policy. They stayed with their units and watched attrition slowly creep up on them. They had little opportunity to do much real medicine and practically no surgery, they had not the equipment to do much of either. Yet, on the skill, judgment, and devotion of these men of low rank, depended the crucial initial treatment and initial triage of casualties. They patched up the terribly wounded, treated their shock, and decided who could and who could not be moved. The satisfaction of follow-up care and definite treatment was denied them. All the time they knew that youngsters out of accelerated courses, with accelerated graduate training, were being given the coveted hospital duties—and promotions.

The Minnesota Academy of Medicine can materially help in correcting some of the defects in the medical department of the Army of the United States. Its members can interest themselves in the problems of the Surgeon General's office. They can encourage helpful co-operation with that office by the medical profession. The army and its reserve components are looking to the medical profession for medical officers; we can help those officers.

It is my considered opinion that certain features of the Medical Department need particular study and correction.

1. A personnel policy that applies equally to all without any flavor of favoritism or influence from subordinate echelons. A policy that will assure:

(a) Reasonable duty assignments, taking into consideration age, physical condition, experience, professional training and military training. Assignments made by a competent medical group.

(b) Rotation of medical officers from field to hospital duties. Also a policy of rotation after reasonable overseas duty to duty in the zone of the interior.

(c) Assurance that nonmedical duties be cut to a minimum. In this regard, however, I would concede that command duty, staff duty, and a reasonable amount of administrative duty are necessary and must be expected.

2. A proper indoctrination program whereby new medical officers are patiently oriented in what the army may reasonably expect of them. In the event of a national emergency, this could well be handled by a team of regular army officers and medical officers with

(Continued on Page 696)

"...pressure of the gravid uterus mechanically interferes..."

in pregnancy

"Constipation is the rule. The pressure of the gravid uterus mechanically interferes with the function of the small intestine and colon per se and also renders the act of defecation less efficient by its effect on the diaphragm, abdominal muscles and levator ani."

—Bockus, H. L.: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1946, vol. 3, p. 999.

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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 694)

previous army experience but who come from civilian status.

3. More consideration to the training offered new officers and to the men picked to give the training. I believe the professional training is well handled. More training is needed in military medicine and surgery. More basic training, service school training, tactical, administration, and army procedure training is desirable. Above all, this instruction should be given by better instructors—ones who have had actual experience.

4. Less waste of medical personnel. The next war will require more medical services on the home front, for the war will be brought to the civilians. It will be total war. Overstaffing must be carefully watched.

5. Some reorganization of field medical units so that they are in more fluid state and their components may be quickly shifted where needed.

6. A study of the system of promotion. Consideration of higher rank for medical officers commensurate with the duties required of them and the rank of other officers with whom they serve.

7. A consideration of the relationships between the medical officer and the line officer. Better co-operation would be possible if the line officers' attitude were improved.

Those of us who have served are proud of it and have no regrets. There is much that is fine in the service. Most of its plans and methods are sound and well thought out. Most of its personnel are the kind of people we liked. However, it was not as good as it might and should be. We want it to become better and we want to help in that improvement program. We ask you, as part of organized medicine, to lend this improvement program your interest and support to the end that the sick and wounded of another war may have the best possible chance to be brought back to health.

Discussion

DR. HAROLD DIEHL: Dr. Creighton's discussion is very opportune. We have just finished a World War which we would all like to forget, but the world situation obviously makes it impossible to do that. Certainly the analysis Dr. Creighton has made of the status of the medical officer of the army is thoughtful and constructive. Dr. McCarthy and others here could give similar discussions on the basis of their experiences in the navy. Certainly too, Dr. Creighton has an exceptional background for the discussion he has given. He and I served in Base Hospital 26 in France during World War I, and during World War II he served for five years as a medical officer with combat units.

After the end of the recent war, the AMA authorized the establishment of a committee to study the experiences of medical officers and the utilization of medical personnel during World War II. I happened to be a member of that committee. It was that committee that formulated and arranged for the distribution and analysis of the questionnaire by Dr. Dickenson. In these studies we had the closest co-operation of the Surgeons General of the army and navy. A report was made to the House of Delegates of the AMA at its meeting in Atlantic City last June. The first recommendation of this committee was that the Surgeons General of the army and navy be given rank and authority commensurate with their responsibilities. Dr. Creighton is correct; the office of the Surgeon General had no control of the personnel in the various theaters to which Dr. Creighton refers.

In the army organization the Surgeon General was responsible not to the general staff but to General Sommerville of the Service of Supply. In the navy the Surgeon General was more closely related to the high command. In our judgment the Medical Departments of the armed forces should be advisory to the highest echelons in planning military activities and service. There has been some change made in the organization of the army, and the status of the Surgeon General has been improved over to what it was in the last war.

I am convinced that the Surgeons General of the army and navy are just as interested as are you and I in getting the finest officers in the army and navy and in offering the sort of service that will attract the highest type of men. Dr. Creighton mentioned that if there is another war the casualties among the military personnel will be small in relation to those among the civilian population. Our country has been fortunate in that our cities have not been touched in either World War I or World War II. What happened to Germany and Japan is evidence of what modern warfare can do to the civilian population. Goering and Hitler made no preparation for the care of civilians. Under strategic bombing, medical services broke down completely and there was terrific and unnecessary loss of life. If there is another war, we can expect that same thing in our own country. In another war it would be catastrophic to have one-third of the medical men taken into the armed forces. They just cannot withdraw such large numbers of doctors from the civilian population.

Plans must be made as to what to do if these possibilities become realities. It is difficult in peacetime to take these things seriously and do the sort of planning that is absolutely essential if we are to survive in a third World War. The AMA at Atlantic City authorized the establishment of a permanent and continuing Council of the AMA on National Emergency Medical Service. I was appointed a member of that Council. It is studying these things which Dr. Creighton has mentioned. One thing that concerns all of us is the time, effort and thought that needs to be given to it and the important part that medical societies will have to play to get these things done. Discussions such as Dr. Creighton's are helpful in pointing out the job that the medical profession has to do.

The meeting was adjourned.

A. E. CARDLE, M.D., *Secretary*

AERO MEDICAL ASSOCIATION MEETS

Aviation medical experts and scientists from many parts of the world gathered in Toronto, Canada, June 16, 17, and 18 for the first meeting of the Aero Medical Association convention in Canada. Under the leadership of Dr. J. W. Tice of Hamilton, president of the association, aero-medical men discussed the latest developments in aviation medicine, in an effort to make flying safer and more comfortable.

Topics discussed at the convention were: visual standards, decompression sickness, air sickness, aircrew selection, sonics and vibration, night vision, the human factor in aircraft design, physical examination for private flying, survival, color vision, hearing standards, acceleration, personal equipment, anoxia and oxygen equipment.

Representatives were present from Mexico, Brazil, Chile, Norway, Sweden, South Africa, Australia, Holland, France, the United States and Canada.

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In Memoriam

DONALD GREY COLP

Dr. Donald G. Colp of Robbinsdale, Minnesota, died April 14, 1948, at the age of seventy-eight. Taken ill last September in Brazil, he was flown back to the Mayo clinic and was ill several months preceding his death.

Dr. Colp was born at St. Margaret's Bay, Nova Scotia, June 25, 1869. He studied at Carleton College and graduated from the Yale Divinity School in 1897. Later in 1908 he obtained a medical degree from the Minneapolis College of Physicians and Surgeons.

In October, 1900, Dr. Colp married Mabel Adams of Minneapolis. She died in January, 1929.

On July 3, 1931, he married the Countess Utta Larisch-Moennich of Bavaria, whom he had met in Vienna. He is survived by his wife, two sons, Dr. Edward A. and Donald Grey, both of Robbinsdale, and two daughters, Mrs. Robert D. Chellis of Boston and Mrs. Donald G. Burch of Saint Paul.

HARRY WILLARD KLINE

Dr. Harry W. Kline of Anoka, died suddenly March 17, 1948, while celebrating the eightieth birthday of his mother.

Dr. Kline was born November 12, 1894, at Anoka, the son of Dr. and Mrs. James Kline. He graduated from the Hahnemann Medical School of Chicago in 1918 and then joined his father at the Kline Sanatorium in Anoka.

In 1919, Dr. Kline married Lucella Morrison of Saint Paul, who survives him.

HJALMAR ERWIN MORTENSBAK

Dr. H. E. Mortensbak, formerly of Hanska and New Ulm, Minnesota, died April 10, 1948.

He was born in Wood Lake Township, August 19, 1910, and was graduated from the University of Minnesota Medical School in 1935. After serving an internship at the Minneapolis General Hospital he located at Hanska. He practiced at New Ulm from 1944 to 1946, when he moved to Great Falls, Montana.

On June 3, 1939, Dr. Mortensbak married Muriel Swihart of Balaton who, with four children, survive him.

He was a member of the Redwood-Brown County Medical Society, the Minnesota State and American Medical Associations.

RUSSELL R. NOICE

Dr. R. R. Noice of Minneapolis died in Miami, Arizona, on April 15, 1948.

Dr. Noice was a graduate of North High School, Minneapolis, and obtained his medical degree from the University of Minnesota Medical School in 1915.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

Dr. Noice is survived by his wife, Gladys, a sister Mrs. Marvin Wickham of Minneapolis and a brother, W. C. Noice of Lisbon, North Dakota.

WOMAN'S AUXILIARY

Nicollet-Le Sueur

The Auxiliary of the Nicollet-Le Sueur Medical Society held a tea, Wednesday, April 14, at Rundstrom Hall on the Gustavus Adolphus Campus, St. Peter. Dr. Robert N. Barr, of Minneapolis, guest speaker, gave an informative talk on "Cancer." Members as well as the public were invited. At the same meeting high school and college girls were invited to hear a talk given by several county nurses, the college nurse and the public school nurse on the shortage of nurses and the need for recruitment of girls for the nursing profession.

Southwestern Minnesota

At the April 12 meeting of the Southwestern Minnesota County Auxiliary, Dr. Reynold Jensen, assistant professor of Child Psychology of the University of Minnesota, gave a talk.

On April 25, Auxiliary members and doctors met for a joint meeting. Speakers at this meeting were Mr. M. F. Brist, attorney for the State Medical Association; Arthur M. Calvin, executive of the Minnesota Hospital Association, spoke on behalf of the "Blue Cross," and acting as director of Minnesota Medical Service, told of the progress of "Blue Shield," giving a full explanation of the setup of the two groups.

DOLLARS AND CENTS — AND CANCER

The American Cancer Society advances the argument that strictly on a dollars-and-cents basis—the least of the costs of cancer—it is good business to finance research for a cure for the disease.

The ACS points out that the price of cancer to this nation runs as high as $2 billion a year—a staggering sum. This includes estimates of medical fees, hospital charges and even cemetery plots and headstones for those who die before their time. It does not include some important intangibles, however—like the full value of the wage-earner to his family, the damage done a home by the loss of a wife and mother, the future worth of a child to his family, community and nation. The dollars-and-cents yardstick cannot measure the pain of cancer patients, the heartaches of their families and the great concern that all of us feel while cancer is around to menace us. These costs are not borne by a few. For every two homes in America there is one cancer death.

Cancer's toll of two billion dollars a year means a contribution of $14 for every man, woman and child in the United States.

In our efforts to find the cause and cure, the nation has made little more than a token effort. Government financing of research and services has risen only recently from $1.5 to $14 million a year. The American Cancer Society, has spent up to $12 million a year. Total these public expenditures, and the answer is $26 million—an annual expenditure of 18 cents per person for research, clinics, detection centers, public education and services to the cancer sick.

Each of us pays $14 a year in involuntary tribute to cancer; but to eradicate the disease, to end the incidental human suffering and to prevent the premature loss of services of the 188,000 people who die of cancer each year our individual effort amounts to 18 cents.—*ACS News Service*, January, 1948.

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Reports and Announcements

AMERICAN COLLEGE OF SURGEONS

The thirty-fourth clinical congress of the American College of Surgeons will be held in Los Angeles, California, with headquarters at the Biltmore Hotel, from October 18 to 22. The program of scientific sessions will be supplemented by operative clinics in hospitals in Los Angeles and vicinity, by showings of operations by television and motion pictures, and by a four-day hospital standardization conference for hospital personnel. There will also be extensive technical and scientific exhibits.

At the convocation which will be held on the final evening of the meeting, approximately 600 initiates will be received into fellowship. The American College of Surgeons now has a total fellowship of more than 15,000 surgeons, including those not in the United States.

SOCIETY OF AMERICAN BACTERIOLOGISTS

The forty-eighth annual convention of the Society of American Bacteriologists was held in Minneapolis, May 10 through 14, attended by 1,200 scientists from the United States and Canada. Meetings were open to all persons interested in bacteriology.

The society's annual lecture, the Oswald T. Avery Lecture, was delivered on May 13 by Dr. Rene Dubos of the Rockefeller Institute for Medical Research.

AMERICAN CONGRESS OF PHYSICAL MEDICINE

The twenty-sixth annual scientific and clinical session of the American Congress of Physical Medicine will be held September 7 through 11 at the Hotel Statler, Washington, D. C. All sessions will be open to members of the medical profession in good standing with AMA.

In addition to scientific sessions, instruction courses will be offered in two groups. One set of ten lectures will be based primarily on physics and physiology, and attendance will be limited to physicians. The other set of ten lectures will be more general in character and will be open to all physicians and to physical therapists who are registered with the American Registry of Physical Therapy Technicians. Full information may be obtained from the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

CHICAGO OPHTHALMOLOGICAL SOCIETY

The Chicago Ophthalmological Society announces that its second annual clinical conference will be held November 29 to December 4. Special attention will be paid to the pathologic and clinical aspects of glaucoma and retinal diseases. Recent advances in general ophthalmic therapeutics also will be presented. The class will be limited to fifty. Further information may be

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MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The Minnesota Society of Neurology and Psychiatry met in St. Mary's Hospital in Rochester on May 29. The one-day session began with surgical clinics held by the neurosurgical staff in the operating rooms of the hospital. During the remainder of the morning, papers were presented by Dr. K. B. Corbin and Dr. F. J. Millen, Dr. A. R. MacLean and Dr. R. G. Bickford, Dr. J. G. Love, and Dr. H. P. Rome, all of Rochester. Following a luncheon in the Mayo Foundation House, an address entitled "The Art of the Lapidary" was presented by Glen M. Waters.

RED RIVER VALLEY ASSOCIATION

Twenty-five physicians, many of them accompanied by their wives, attended a dinner meeting of the Red River Valley Medical Association in Crookston on April 30. Following the dinner a motion picture on child behavior problems was shown and discussed.

Principal speaker of the evening was Dr. C. O. Erickson, Minneapolis, who spoke on electroshock therapy in psychiatric disorders. Plans were made to hold the next meeting of the organization on July 23 in Thief River Falls.

WASHINGTON COUNTY SOCIETY

The Washington County Medical Society held a previously postponed meeting at Forest Lake on May 11. Only three members were absent. The meeting was devoted to a presentation of the Minnesota Medical Service plan by Mr. Beise and Mr. Calvin.

The immunization project in the county schools was reported to have been completed on April 9.

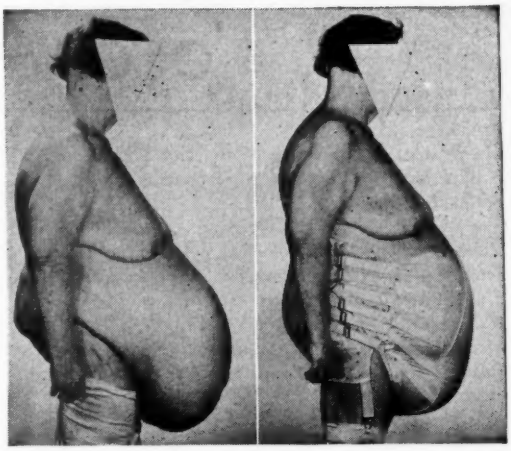
STEARNS-BENTON COUNTY SOCIETY

Principal speaker at the regular monthly dinner meeting of the Stearns-Benton County Medical Society in St. Cloud on May 20 was Dr. Charles Rea, Saint Paul. Dr. Rea, an instructor in surgery at the University of Minnesota Medical School, spoke on "Intestinal Obstruction." Forty-five members of the society attended the meeting.

SOUTHWESTERN MINNESOTA SOCIETY

At the final meeting of the season, held in Worthington on May 24, members of the Southwestern Minnesota Medical Society heard a talk on "Endocrine Gland Preparations" by Dr. C. J. Ehrenberg, Minneapolis. An obstetrician, Dr. Ehrenberg is an associate clinical professor at the University of Minnesota Medical School.

Also on the program at the meeting was Dr. R. F. Pearson, Slayton, who reported on eight cases of trichinosis recently developing from one source of infection in his community.



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Of General Interest

In Waseca at a meeting of the city council on April 13, Dr. James F. Lynn was reappointed health officer for another term.

* * *

The Cleveland Dermatological Society has invited Dr. Henry E. Michelson, Minneapolis, to be the guest speaker at the twenty-fifth anniversary of the organization.

* * *

Dr. Myron O. Henry, Minneapolis, has been elected president of the American Academy of Orthopaedic Surgeons.

* * *

At the annual meeting of the American Gastroenterological Association in Atlantic City on May 1, Dr. J. Arnold Bargen, Rochester, was elected vice president of the organiaztion.

* * *

Dr. L. A. Brunsting, Rochester, was elected secretary of the American Dermatologic Association at a meeting of the organization recently held in Coronado, California.

* * *

Among Minnesota physicians attending the annual meeting of the American College of Physicians in San Francisco in April were the Thysell brothers, Dr. V. Duane Thysell of Hawley and Dr. Desmond M. Thysell of Minneapolis.

* * *

"Treatment of Chronic Alcoholism" was the title of a paper presented by Dr. Philip H. Heersema, Rochester, at the Minnesota Welfare Conference in Saint Paul on May 3.

* * *

Dr. Philip K. Arzt, Saint Paul, assistant clinical professor of neuropsychiatry at the University of Minnesota, was recently appointed senior consultant in electroencephalography at the University Medical School.

* * *

The oldest living former intern of St. Mary's Hospital in Minneapolis, Dr. W. H. Valentine of Tracy attended an alumni meeting of the hospital staff in Minneapolis on May 19.

* * *

Presentation of the *Minneapolis Star and Tribune* award for leadership in Minnesota was made to Dr. A. E. Cardle, Minneapolis, at the annual convention of the Minnesota State Medical Association in Minneapolis on June 9. The award was made in recognition of Dr. Cardle's accomplishments as president of the state medical society.

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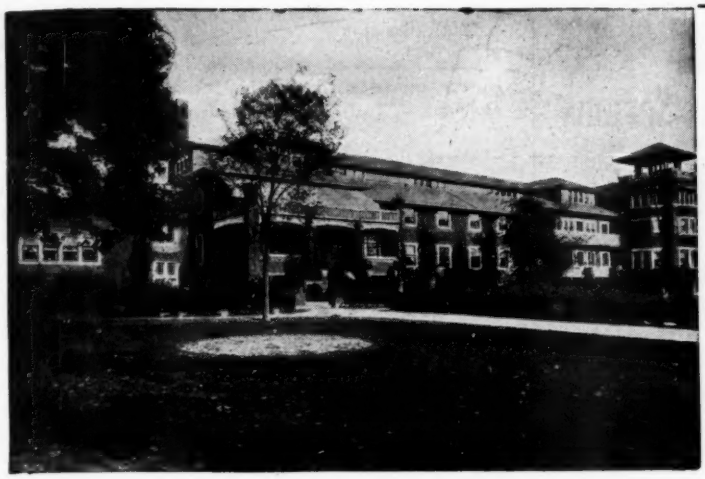

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At a meeting of the Lyon-Lincoln Counties Medical Society at Marshall on May 4, Dr. Raymond D. Pruitt, Rochester, spoke on "The Consideration of Certain Variations in the Anginal Syndrome."

* * *

Dr. H. F. Polley, Rochester, presented a paper entitled "Rheumatoid Arthritis; Its Diagnosis and Treatment" at a meeting of the Marshalltown Medical Society in Marshalltown, Iowa, early in May.

* * *

Hopkins will have a new medical clinic in the near future if the plans of Dr. A. C. Stahr materialize. At a council meeting in Hopkins on May 18, Dr. Stahr was granted a permit for the construction of a clinic on Eighth Avenue North.

* * *

While attending the annual clinic of the Medical Society of Ingham County in Lansing, Michigan, on April 29, Dr. L. P. Howell of Rochester presented a paper on "The Management of Goiters."

* * *

"Urologic Problems in Pediatrics" was the title of a talk presented by Dr. J. L. Emmett, Rochester, at a meeting of the Tri-County Medical Society in Mankato on April 29.

* * *

While participating in a round table conference of the American Cancer Society in Boston on April 12 and 13, Dr. Lewis B. Woolner, Rochester, discussed "Carcinoma Cells in Sputum and Bronchial Secretions."

One of the speakers at a meeting of the Interurban Academy of Medicine in Duluth on May 19 was Dr. Anderson C. Hilding, Duluth, who spoke on "The Fenestration Opening: Indications and Results."

* * *

It was announced early in May that Dr. Martin E. Janssen of Saint Paul would join the staff of the Northwestern Clinic in Crookston late in June. Dr. Janssen is a specialist in internal medicine.

* * *

Four Tracy physicians, Dr. W. G. Workman, Dr. A. D. Hoidale, Dr. W. H. Valentine and Dr. O. J. Esser journeyed to Marshall on April 20 to attend a meeting of the Lyon-Lincoln Medical Society.

* * *

Early in May, Dr. E. G. Beckering of Edgerton flew his newly purchased Republic Seabee airplane to Worthington to qualify for his water rating in flights off Lake Okabena.

* * *

Dr. Erling S. Platou and Dr. Richard B. Tudor, Minneapolis, have announced the association of Dr. Allan J. Hill and Dr. Albert J. Schroeder in the practice of pediatrics.

* * *

Recently elected as members of the board of the Minneapolis Health Action Committee were Dr. Karl W. Anderson and Dr. Paul F. Dwan, both of Minneapolis. At the same time Dr. Hermina Hartig, Minneapolis, was re-elected for a three-year term on the board.

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Dr. William R. McClusky, a graduate of the University of Minnesota Medical School, has opened offices for the practice of medicine in Paynesville. Dr. McClusky served his internship at Minneapolis General Hospital.

* * *

Among the speakers at the fifteenth anniversary luncheon of the Catholic Women's Hospital Association, held in Minneapolis on May 17, were Dr. and Mrs. E. S. Mariette. Dr. Mariette is superintendent of the Glen Lake Sanatorium.

* * *

Among officers recently elected to head the Tuberculosis and Health Association of St. Louis County were Dr. G. A. Hedberg, Nopeming, vice president; Dr. R. P. Pearsall, Virginia, second vice president, and Dr. Mario Fischer, Duluth, treasurer.

* * *

The Associated Women of the American Farm Bureau Federation have donated $3,000 to establish a research fellowship for the study of the cause and control of poliomyelitis. The fund is to be known as the Mrs. Charles W. Sewell Memorial Fund.

* * *

Guest speaker at a meeting of the Kiwanis Club in Olivia on April 26 was Dr. F. W. Penhall of the Willmar State Hospital. Dr. Penhall spoke on the causes of heart disease and some of the means of prevention.

* * *

In International Falls on April 22, Dr. Arthur H. Wells, Duluth, president of the Minnesota Division of the American Cancer Society, addressed a public meeting, spoke to school groups and gave a radio talk in behalf of cancer fund campaign then being conducted.

* * *

It was announced on April 21 that Dr. H. R. Ransom, who had been practicing medicine in Osseo since leaving Crosby about two years previously, planned to return to Crosby to become associated in practice with Dr. James B. Nixon in the Cuyuna Range Clinic.

* * *

"The Role of Antihistaminic Drugs in the Treatment of Allergy" was the title of a paper presented by Dr. William S. Eisenstadt, Minneapolis, at the thirty-seventh semi-annual postgraduate extension course of the Lyon-Lincoln County Medical Society in Marshall on April 20.

* * *

A series of lectures were presented by Dr. W. B. Martin, Rochester, at a course in physical medicine at the Veterans Administration Hospital at Hines, Illinois, on May 3 and 4. Subjects for the lecture series were "Prescription Writing in Physical Medicine" and "Microwave Diathermy."

* * *

It was a triple celebration on April 30 for Dr. F. W. Mayer, Sr., of Saint Paul. The three events which were celebrated were his birthday, the forty-fifth anniversary of his graduation from the University of Maryland Medical School, and the completion of his thirty-ninth year in the practice of medicine in Saint Paul.

In Rochester, at the annual health day meeting of the Four-Counties Medical Society Auxiliary and the Altruistic Club, on April 21, Dr. Howard P. Rome, consultant in psychiatry at the Mayo Clinic, spoke on "Psychosomatic Medicine" and presented motion pictures to illustrate his lecture.

* * *

A spring chest clinic was held in Faribault on May 3 by Dr. Karl H. Pfuetze, superintendent of Mineral Springs Sanatorium. Dr. Pfuetze administered the Mantoux test to persons desiring it and also examined ex-patients of the sanatorium living in the area. On May 4 he conducted a similar chest clinic in Morristown.

* * *

More than 700 persons from Elbow Lake and the surrounding area paid tribute on April 18 to Dr. E. T. Reeve in an "appreciation celebration." Dr. Reeve has practiced in Elbow Lake and Grant County for forty-eight years, during which time he has delivered more than 2,000 babies.

* * *

Dr. Ralph T. Knight and Dr. Joe W. Baird, Minneapolis, announce the association of Dr. Stanley P. Wesolowski, Dr. Frederick H. Van Bergen and Dr. Ellis N. Cohen in the practice and teaching of anesthesiology, with headquarters at 412 Delaware Street S.E., Minneapolis.

* * *

Among Minneapolis physicians who attended the recent meeting of the American College of Physicians in San Francisco were Dr. O. L. Nelson, Dr. Wesley Spink, Dr. Cecil J. Watson, Dr. A. C. Kerkhof, Dr. H. O. Altnow, Dr. S. Marx White, Dr. George E. Fahr, Dr. Russell C. Lindgren and Dr. Clyde A. Undine.

* * *

During the month of May, immunization against diphtheria and smallpox was carried out in the schools of Stillwater by the local physicians. This completed the immunization of school children in the county for this year. Chairmen have been named to canvass the county for registration for the chest x-ray survey to be conducted in Stillwater from July 22 to September 30.

* * *

Dr. J. E. Jenson, formerly of Eau Claire, has been associated with Dr. J. W. Stuhr of Stillwater since June 1. A graduate of the University of Minnesota Medical School, Dr. Jenson was on the plastic surgery staff at Valley Forge General Hospital, Phoenixville, Pennsylvania, for two years during World War II. For the past year he practiced at Eau Claire.

* * *

A special meeting of the Southwestern Medical Society and Auxiliary was held on April 26 to discuss the Blue Shield plan. Speakers for the occasion were A. M. Calvin, executive director of the Minnesota Hospital Service Association and acting director of Minnesota Medical Service, Inc., and E. Manley Brist, attorney for the Minnesota State Medical Association.

* * *

One of the speakers at a gathering of Lake Minnetonka residents on May 7 to discuss lake pollution was Dr. W. W. Rieke, Orono township health officer, who

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said that lakeside dwellings with outdoor facilities built close to the lake during low water stages now constitute a particular health menace, since earlier lake levels have been restored.

* * *

Dr. Ernest M. Hammes, Jr., has become associated with his father in the practice of psychiatry and neurology with offices at 1124 Lowry Medical Arts Building, Saint Paul. Dr. Hammes, Jr., graduated from the Harvard Medical School in 1941, served in the army for five years, his last assignment being consultant in neurology to the First Army. For the past three years he has been a Fellow in neurology and psychiatry at the Mayo Foundation.

* * *

Dr. Robert A. Aldrich of Anoka, at present a senior resident physician at the University Hospitals in Minneapolis, has been awarded a year's fellowship for graduate study in pediatrics by the National Foundation for Infantile Paralysis. Dr. Aldrich served in the navy after graduating from Northwestern University Medical School in 1944.

* * *

Swanville lost a physician late in March when Dr. John Ylvisaker, who had been associated with Dr. E. J. Simons and Dr. E. G. Knight in Swanville for seven months, left for Minneapolis to practice in an office in the Medical Arts Building during April, May and June. Dr. Ylvisaker planned then to go to a hospital in Detroit, Michigan, to continue his medical practice.

* * *

In April, Dr. Bradley Kusske, son of Dr. A. L. Kusske of New Ulm, became associated in practice with Dr. Howard A. Vogel of New Ulm. A graduate of the University of Minnesota Medical School, Dr. Kusske was in military service for two years, then practiced for six months at Caledonia before joining Dr. Vogel.

* * *

In April it was announced by the Peterson-Lenont Clinic of Virginia that Dr. Robert Petey would soon open an office in Buhl for the practice of medicine. A graduate of Harvard, Dr. Petey interned at Ancker Hospital, Saint Paul, and at the University of Minnesota Hospitals. He served in the army for approximately three years.

* * *

Dr. Carl O. Rice has been elected president of the Minneapolis Surgical Society to succeed Dr. L. Haynes Fowler. Other officers are Dr. Edward A. Regnier, vice president; Dr. Hamlin A. Mattson, recorder; Dr. Rudolph E. Hultkrans, treasurer, and Dr. Ernest R. Anderson, secretary. Dr. W. R. Jones was chosen a member of the Council.

* * *

Announcement was made on April 26 by Dr. B. O. Mork, Jr., Worthington, that Dr. R. W. Robinett, who had been taking postgraduate work at the University of Minnesota Medical School, had joined the staff of the Worthington Clinic. Dr. Robinett, whose specialty is internal medicine, is a graduate of Western Reserve University, Cleveland, Ohio.

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Two Rochester physicians were on the program at a meeting of the Park Region District and County Medical Society at Fergus Falls late in April. Dr. D. O. Ferris presented a paper entitled "Treatment of Traumatic Injuries of the Genito-urinary System," while Dr. Roger L. J. Kennedy spoke on "Osseous Changes in Some Disease of Children."

* * *

Speaking at a health panel at the Labor Welfare Institute in Minneapolis on May 8, Dr. Clare Gates, assistant city health commissioner, said that the per capita tax expenditure for health in Minneapolis should be $1.50 instead of the 71 cents it was last year. One of the primary needs of the city, to be filled when additional funds are available, he said, is a maternal and child health program under the direction of the city health department.

* * *

At a meeting of the Medical Association of the State of Alabama at Mobile during the middle of April, Dr. Andrew B. Rivers, Rochester, gave a motion picture demonstration and presented a talk on "The Syndrome of Peptic Ulcer Perforating into the Pancreas." Later in the month he discussed the same subject at a meeting of the State Medical Association of Texas in Houston.

* * *

At the recent annual meeting of the American Association of Anatomists in Madison, Wisconsin, Dr. A. T. Rasmussen, professor of anatomy at the University of Minnesota, was elected to the position of vice president. University of Minnesota anatomists presented one-sixteenth of all the papers offered at the meeting, which was attended by representatives of ninety medical schools.

* * *

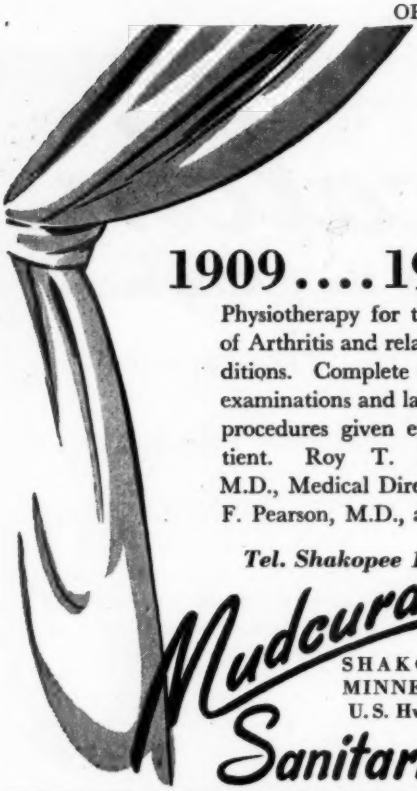
Dr. Jason K. Hartjen, formerly of Detroit, Michigan, has become associated in practice with Dr. D. H. Garlock and Dr. A. V. Garlock of Bemidji. Dr. Hartjen has conducted a surgical practice in Detroit and Grand Rapids, Michigan, at the Cornell Medical Center in New York, and at Tilton General Hospital in Trenton, New Jersey. During April of this year, before he became associated with the Bemidji physicians, he conducted the practice of Dr. D. H. Garlock while the latter was on a vacation.

* * *

On April 3, Dr. Arthur Felion left Two Harbors for Saint Paul to enter private practice with offices in the Lowry Medical Arts Building. Dr. Felion had been on the staff of the Community Health Center Hospital since February, 1947. Upon his departure for Saint Paul, he was replaced in Two Harbors by Dr. W. F. Nuessle, who plans to remain only until July 1 when he will begin a residency at Ancker Hospital in Saint Paul.

* * *

New staff member of the Bratrud Clinic in Thief River Falls is Dr. W. M. Feigal, a graduate of the University of Minnesota Medical School in 1943. After serving his internship at Minneapolis General Hospital, followed by a residency in urology at the same institution, Dr. Feigal spent two years in the army at Oliver



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Surgical Anatomy and Clinical Surgery, two weeks, starting July 6, August 16, September 27.
Surgery of Colon and Rectum, one week, starting June 14, September 20.
Surgical Pathology every two weeks.
UROLOGY—Intensive Course, two weeks, starting September 27.
Fractures and Traumatic Surgery—Intensive Course, two weeks, starting June 7, October 25.
OPHTHALMOLOGY—Intensive Course, two weeks, starting September 20.
Refraction Methods, four weeks, starting October 11.
Ocular Fundus Diseases, one week, starting June 7, November 15.
GYNECOLOGY—Intensive Course, two weeks, starting September 13.
Vaginal Approach To Pelvic Surgery, one week, starting September 27.
OBSTETRICS—Intensive Course, two weeks, starting June 21, September 27.
MEDICINE—Intensive Course, two weeks, starting October 11.
Personal Course In Gastroscopy, two weeks, starting June 28, July 12.
Electrocardiography and Heart Disease, two weeks, starting August 2.
DERMATOLOGY—Formal Course, two weeks, starting October 4.
Clinical Course every two weeks.
OTOLARYNGOLOGY—Intensive Course, two weeks, starting October 18.

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General Hospital in Augusta, Georgia, where he was chief of the urological section. He is serving as urologist with the Thief River Falls clinic.

* * *

The fourth annual John B. Johnston Lecture was delivered at the University of Minnesota on May 19 by Dr. David P. C. Lloyd, neurophysiologist at the Rockefeller Institute for Medical Research. His subject was "Monosynaptic Reflexes and the Myostatic Unit."

The annual John B. Johnston Lecture honors the memory of the former dean of the University's College of Science, Literature and the Arts, a noted neuro-anatomist and educational administrator, who died in 1939.

* * *

Dr. Philip S. Hench of the Mayo Clinic spoke on yellow fever before the International Congresses on Tropical Medicine on the occasion of the Walter Reed Memorial Celebration on May 12 in Washington, D. C. About 2,000 members and delegates assembled to celebrate the forty-eighth anniversary of the discovery by Dr. Walter Reed of the transmission of yellow fever by the mosquito. The gathering was attended by scientists, physicians and public officials from all over the world.

* * *

Alexandria physicians have paid tribute to the memory of the late Dr. Peter E. Kierland by installing two special children's beds in St. Luke's and Our Lady of Mercy Hospitals in that city. The beds, specially equipped for children up to twelve years of age, were purchased by donations from all Alexandria physicians, who wished to set up a memorial in accord with the late doctor's love for children. Dr. Kierland, who practiced medicine in Alexandria for twenty-five years, died in November, 1947.

* * *

It was announced on May 14 that Dr. F. C. Mann, Rochester, had resigned as a Mayo Clinic governor and as director of the Institute of Experimental Medicine. The reason given by Dr. Mann for his resignation was that administrative duties and responsibilities had been seriously interferring with work in his primary interest, research. The clinic board of governors announced that Dr. Mann would continue with his experimental investigations "with the fullest facilities and unhampered by administrative duties."

* * *

Principal speaker at a meeting of the Minnesota Academy of Ophthalmology and Otolaryngology, held in Rochester on May 14, was Dr. Hugo L. Bair of the Mayo Clinic whose topic was "Surgery of the Eye."

Approximately 100 physicians and their wives attended the meeting which was directed by Dr. T. R. Fritsche, New Ulm, president of the organization. Following evening dinner, motion pictures taken in the Canadian Rockies were shown by Dr. Malcolm C. Pfunder, Minneapolis.

* * *

On April 22, Dr. Mario Fischer, Duluth health director, was asked by a city-county committee to proceed with a fact-finding analysis of plans to develop a county-wide health service in St. Louis County. Such a health

service would supplant the many individual health departments now existing throughout the county. In regard to the proposed plan, Dr. Fischer stated that a combined public health unit undoubtedly would save money, improve service and provide service to rural areas not receiving it.

* * *

Purchase of the Gamble Clinic in Albert Lea by Dr. Clayton E. J. Nelson and Dr. E. S. Palmerton was announced on April 26. The medical establishment was purchased from the estate of the late Dr. J. Will and Dr. Paul M. Gamble, both of whom died in 1947.

Dr. Palmerton has been associated with the Gamble Clinic since 1940, except for two and one-half years which he spent in the army. Dr. Nelson joined the clinic staff in 1945 after his release from the army.

The name, Gamble Clinic, will continue to be used by the purchasers.

* * *

A request for a county public health nurse was rejected by Becker County commissioners at a meeting on May 5. The request had been made by the Clay-Becker Medical Society, of which Dr. R. R. Hendrickson of Sand Beach Sanatorium is secretary.

In a letter to the county commissioners Dr. Hendrickson pointed out that a nurse would be needed to help conduct a contemplated x-ray survey and that also there was great need for such a nurse on a permanent basis. Although no statement was made by the commissioners it was believed that the request was rejected as an economy move.

Eden Valley acquired a new physician early in May when Dr. Henry M. Broker, formerly of St. Cloud, opened offices for the practice of medicine. A graduate of the Marquette University School of Medicine, Dr. Broker interned at St. Joseph's Hospital in Milwaukee, Wisconsin. He then entered the navy, serving first at the U. S. Naval Hospital in Bainbridge, Maryland, at the University of Maryland Hospital and at Johns Hopkins Hospital, after which he was appointed to flight surgeon's training at Pensacola, Florida. As a flight surgeon he served in the Caribbean, the Pacific, the Aleutian and Alaskan theaters of operation.

* * *

New medical director of the Arrowhead Health Center, Inc., in Duluth, is Dr. Donald K. Freedman, formerly of White Plains, N. Y., whose appointment to the office was announced on April 17. Dr. Freedman, a graduate of Tufts College Medical School, has taken postgraduate work at the Yale University School of Medicine and at the Columbia University School of Public Health. He was in the U. S. Public Health Service for five years. In 1947, on a Rockefeller Foundation fellowship, he studied prepaid group medical practice plans in all parts of the country. He recently was medical director of a health and welfare plan in New York.

* * *

Tribute was paid to Dr. Robert L. Bowen, Hibbing, at Hospital Day ceremonies in Hibbing General Hospital on May 12.

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Physicians, nurses, civic leaders and hospital staff members assembled on the occasion to praise the work of Dr. Bowen and to unveil a life-sized portrait of him presented to the hospital by a group of friends. The ceremonies were in recognition of the efforts put forth by Dr. Bowen in instigating the construction of the hospital in 1922 and in bringing it under the supervision of the Sisters of St. Benedict in 1942. Principal speaker for the gathering was Dr. Edward Tuohy of Duluth, who directed the unveiling of the portrait.

A graduate of the University of Wisconsin in 1912, Dr. Bowen interned at Augustana Hospital in Chicago, and later became chief surgeon at Colon Hospital in Panama for two years. He then began his practice in Rood Hospital in Hibbing and at the Range Hospital in Buhl.

* * *

Among Minnesota physicians attending a three-day continuation course in cardiovascular diseases at the University of Minnesota, April 15 through 17, were Dr. Bernette G. Nelson, Menahga; Dr. L. A. Smith, Balaton; Dr. Roy T. Pearson, Shakopee; Dr. Richard N. Sather, Mora; Dr. Alfred S. Nelson, Thief River Falls; Dr. Walter Scott Neff, Virginia, and Dr. R. E. Carlson, Stillwater.

The course included discussions on rheumatic heart disease in children, diagnosis and treatment of acute coronary thrombosis, care of the obstetrical patient with heart disease, advances in the use of cardiac drugs, and diagnosis of congenital heart disease.

* * *

With the addition of two members, a medical group in Albert Lea incorporated early in May under the name Medical Arts Clinic.

Joining Dr. D. S. Branham, Dr. S. A. Whitson and Dr. J. P. Person, all of Albert Lea, were Dr. Theodore Hansen and Dr. Ruben F. Schmidt. Dr. Hansen, a graduate of the Nebraska College of Medicine, has been associated with Drs. Branham, Whitson and Person since June, 1946, maintaining an office in Alden. Dr. Schmidt, a graduate of the Wisconsin College of Medicine in 1943, interned at St. Luke's Hospital in Duluth. He is taking over the practice vacated in Alden by Dr. Hansen.

* * *

After practicing in Benson for forty-eight years, Dr. Oscar Daignault sold his practice on April 28 to Dr. Richard P. Griffin, who had been sharing his office since September, 1947.

Dr. Daignault, a graduate of Montreal Medical School in Canada, came to Minnesota shortly after graduation and practiced for a short time in Saint Paul, Dayton and Hancock. He began practice in Benson in April, 1900. In addition to the duties of his practice, he has served as city and county health officer and as coroner.

Dr. Griffin, who purchased the practice, graduated from the University of Iowa Medical School in 1944 and interned at Santa Rosa Hospital in San Antonio, Texas. After serving in the navy for a period, he became associated with Dr. C. I. Oliver at Graceville prior to moving to Benson in the fall of 1947.

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Forty physicians gathered in St. Cloud on May 6 for the annual medical conference of the Central Minnesota Chapter of the American Academy of General Practice.

During the day scientific sessions were held, followed by a dinner and a business meeting. Principal speaker at the dinner was Dr. Otto A. Lenz, Minneapolis, who discussed the merger of the American College of Physicians and Surgeons with the American Academy of General Practice.

In attendance at the meeting was Dr. Charles E. Donaldson, Foley, state president of the academy. Dr. A. M. Watson, Royalton, is president of the area chapter.

Among physicians presenting talks and demonstrations at the scientific sessions were Dr. Robert Peterson, Dr. H. B. Clark, Dr. E. V. Wetzel, Dr. L. M. Evans, Dr. James E. Murphy, and Dr. James O'Keefe, all of St. Cloud; Dr. William Hall and Dr. S. Raetz, both of Maple Lake; Dr. F. Baumgartner, Albany; Dr. E. J. Schmitz, Holdingford, and Dr. A. J. Lenarz, Long Prairie.

* * *

At the age of eighty-five, Dr. Alvah W. Jones, Red Wing, resigned as city health officer on May 4 after twenty-one years of service, to complete his retirement from the medical field. He plans to devote his future to literary pursuits.

About six years ago, Dr. Jones retired from an active medical practice, concluding duties that began in 1894 when he moved to Red Wing to take over the practice of his uncle, Dr. Philo Jones. Long before 1894, however, he taught and worked in the wilderness of northern Minnesota, serving part of the time as a member of state geological and geographical survey groups. He was the first school teacher at Tower and later taught at the Norwegian Hauge Seminary there. Moving to the East, he enrolled at George Washington University where he received his medical degree. He then practiced for two years in Washington, D. C., before moving to Red Wing on the invitation of his uncle.

During his years in Red Wing, Dr. Jones has served on the board of education for fifteen years, as president of it for three years. He was official physician at the Red Wing State Training School for nearly eight years. His May 4 resignation ended twenty-one years as city health officer.

* * *

HOSPITAL NEWS

The board of directors of the new municipal hospital in Granite Falls announced on April 26 that the operating and maintenance staff for the hospital was complete except for three registered nurses. It was hoped that the three nurses could be obtained before the scheduled opening date of the hospital on June 1. Superintendent of the new hospital is Ellen Phillips, formerly of Worthington, who was superintendent of the hospital at Big Fork for eighteen months before entering the nurses' corps in the army where she served for two years.

* * *

Recently elected chief of staff of Fairview Hospital, Minneapolis, Dr. Nora Winther is the only woman

physician ever to head a medical staff of a general hospital in Minneapolis. A gynecologist, Dr. Winther is a graduate of the University of Minnesota Medical School.

Other officers elected to head the Fairview staff are Dr. A. C. Skjold, vice chief; Dr. R. A. Hoffman, secretary, and Dr. D. B. France, treasurer.

* * *

BLUE SHIELD NEWS

Number of persons covered by Blue Shield as of May 15, 1948	21,145
Number of Blue Shield cases paid on May 15, 1948	140
Total for 1948	352
Amount paid on Blue Shield cases on May 15, 1948	$ 5,187.23
Total for 1948	13,402.66

The following is an article released by the Associated Medical Care Plans which is the National Association of Blue Shield Plans. This article has been sent to all state medical journals to explain Dr. Paul R. Hawley's appointment as chief executive officer of Blue Shield and Blue Cross and also his relationship to each plan. It is felt that this article will debunk the idea that Blue Shield and Blue Cross are going to merge.

Blue Shield and Blue Cross Form Joint Executive Committee

Agreement was reached late in March between Blue Shield and Blue Cross plans, during their 1948 Semi-annual Conference in Los Angeles, on the forming of a Joint Executive Committee.

As chief executive officer for Blue Shield and Blue Cross, Dr. Paul R. Hawley will be solely responsible to the Joint Executive Committee on all matters of mutual concern to both organizations, reporting directly to each organization separately on those matters as in his judgment are of sole concern to either body individually.

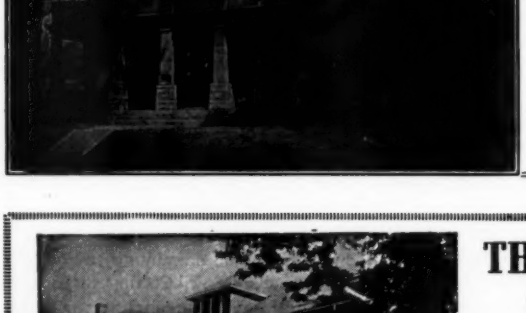
"This merging of interests in the mutual employment of an executive officer does not change the status of either organization," said Dr. L. Howard Schriver, president of the Blue Shield national organization. "It means, simply, that both Blue Shield and Blue Cross recognized the advantage to be gained in securing the leadership of an outstanding administrator such as Dr. Hawley has proved himself to be in his handling of previous responsibilities."

The newly created Joint Executive Committee will consist of six members, equally divided between Blue Shield and Blue Cross Commissions.

J. Douglas Colman, chairman of the Blue Cross Commission, will serve as chairman of the joint committee until the annual meetings of Blue Shield and Blue Cross plans in the fall of 1948.

While the present chairman of the Joint Executive Committee is a representative of the Blue Cross Commission, it was agreed that the chairmanship of this committee should alternate semi-annually. A Blue Shield representative will become chairman of the joint committee immediately following the next annual meetings.

Representing the Blue Shield Commission on the Joint Executive Committee are Dr. L. Howard Schriver, Cincinnati, president of Associated Medical Care Plans



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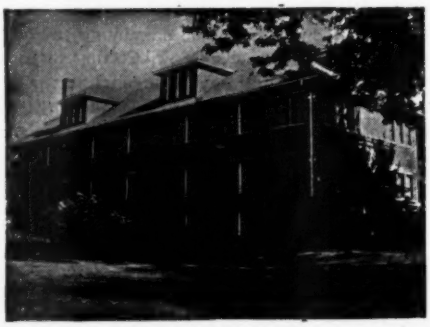

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(national association of Blue Shield plans); Dr. F. L. Feierabend, Kansas City; and Jay C. Ketchum, Detroit.

Frank E. Smith, director of the Blue Shield organization, and Richard M. Jones, director of Blue Cross, will hereafter be administratively responsible to Dr. Hawley, and through his office to the Blue Shield and Blue Cross commissions respectively.

Blue Shield and Blue Cross staffs now occupy office quarters at separate locations in Chicago. It was agreed in Los Angeles that both staffs should occupy offices at a common location in order that Dr. Hawley's administrative duties might be simplified. Negotiations are under way currently for the securing of new office space which will adequately house both national organizations.

Since Dr. Hawley assumed his position as chief executive officer for Blue Shield and Blue Cross on April 1, he has been filling many speaking engagements with state medical societies, hospital organizations, and civic clubs.

As one of his first official duties, Dr. Hawley represented Blue Shield and Blue Cross on the executive committee of the recent National Health Assembly, held in Washington, D. C., on May 1-4.

The Minnesota Blue Shield would like to take this opportunity to announce that claims are now being paid weekly instead of monthly. Payments are sent to Doctors of Medicine each Friday for the cases that have been completed during the previous week. By doing this the vast majority of cases will be paid in two weeks or less, thus it will be possible in most instances for the physician to show this allowance on the patient's monthly statement.

MINNESOTA DEPARTMENT OF HEALTH

Improvement of conditions in Minnesota's institutions for the mentally ill, and development of more effective techniques for preventing mental illness, were the chief measures urged by psychiatrists who took part in the first Mental Health Institute to be held in Minnesota. This Institute, designed to acquaint lay leaders with aspects of the mental hygiene problem and with the views of physicians regarding methods for its solution, was held June 7-9 on the University Campus, under the joint auspicies of the State Department of Health, the

(Continued on Page 715)

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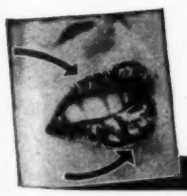

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WANTED—Assistant to general surgeon in suburban town to do general practice and obstetrics. Good salary, and partnership later, if mutually agreeable. Address E-89, care MINNESOTA MEDICINE.

FOR SALE—Physician's balance scale, with measuring rod, $25.00. Address E-90, care MINNESOTA MEDICINE.

PHYSICIAN WANTED—Small northern Minnesota clinic, with excellent equipment and opportunity, desires a general practitioner. Guarantee with partnership offered. Address E-87, care MINNESOTA MEDICINE.

WANTED—Registered medical technician for doctor's office in Minneapolis. Nice hours, good salary. State age, school of graduation, previous experience, references and salary desired. Address E-88, care MINNESOTA MEDICINE.

WANTED—Doctor to take over my general practice next September and October. Address E-84, care MINNESOTA MEDICINE.

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* General practitioner wanted for Minnesota clinic. Fine office appointments furnished. Salary at current levels.
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WANTED—Physician to take over my lucrative general practice in Fosston, Minnesota. Should be capable of doing some surgery. Will introduce. Good modern town with Community Hospital. Available September 1, 1948. Dr. Abraham Shedlov, Fosston, Minnesota.

PROFESSIONAL MEDICAL ILLUSTRATOR—Accurate drawings made from case reports or written descriptions. Charts, graphs, exhibits prepared. References. Reasonable rates. Address Herbert Hunter, Box 86, Star Prairie, Wisconsin.

FOR SALE—Complete x-ray equipment in good condition; also all-Victor electrical treatments, several pieces. Pay for Bucky, x-ray table and equipment, and all rest will be th.own in. Time to pay, if desired. Bargain. Address E-61, care MINNESOTA MEDICINE.

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UNITED PROPERTIES INCORPORATED

(Continued from Page 713)

Minnesota Mental Hygiene Association, and the University.

Dr. A. Alan Challman, of the University's Department of Psychiatry and Neurology, characterized mental illness as today's number one public health problem. There are not enough psychiatrists available to staff the community clinics often suggested by the public at present, he pointed out, and the training of more psychiatrists and psychiatric aids is one of the chief needs of the immediate future. Another great need is expansion of the research program in this field. At present, he said, only 25 cents a case is being expended on research, whereas thousands of dollars are spent on the care and treatment of each case.

Dr. Alexander G. Dumas, chairman of the Governor's Committee on Mental Hygiene, voiced the committee's recommendation that a five-million-dollar psychiatric institute be set up in connection with the Medical School of the University of Minnesota within the next three years, primarily as a training center for all types of psychiatric workers, including physicians, nurses, social workers, and attendants. Patients would be referred by their own physicians, and a continuous research program in acute treatments would be maintained.

Other physicians on the Institute program were Drs. Edward Dyer Anderson, C. A. Aldrich, Harold B. Hanson, Donald W. Hastings, Roger W. Howell, Reynold A. Jensen, Hyman S. Lippman, and Edmund W. Miller.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

NEUROANATOMY. Second Edition. Fred A. Mettler, A.M., M.D., Ph.D. Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. 536 pages. Illus. Price, $10.00, cloth. St. Louis: C. V. Mosby Co., 1948.

SUCCESSFUL MARRIAGE. Edited by Morris Fishbein, M.D., and Ernest W. Burgess, Ph.D. 547 pages. Price, $6.00, cloth. Garden City, N. Y.: Doubleday & Company, Inc., 1947.

SYNOPSIS OF PEDIATRICS. Fifth Edition. John Zahorsky, A.B., M.D., F.A.C.P. Professor of Pediatrics and Director of Department of Pediatrics, St. Louis University School of Medicine, and Pediatrician-in-Chief to St. Mary's Group of Hospitals, Fellow of American Academy of Pediatrics. Assisted by T. S. Zahorsky, B.S., M.D., Senior Instructor in Pediatrics, St. Louis University School of Medicine, and Assistant Pediatrician to St. Mary's Group of Hospitals. 449 pages. Illus. Price, $5.50, flexible binding. St. Louis: C. V. Mosby Co., 1948.

HISTORY OF THE MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER, 1797-1947. A compilation from the available minutes of the Society and various contemporary sources during the years for which the minutes were lost. 193 pages. Cloth. White Plains, N. Y.: Medical Society of the County of Westchester, 1947.

THE METROPOLITAN LIFE: A STUDY IN BUSINESS GROWTH. Marquis James. 480 pages. Illus. Price, $5.00. New York: The Viking Press, 1947.

The story of the Metropolitan Life Insurance Company parallels the development of life insurance in this country. Since medicine and life insurance are mutually

related both from the standpoint of risk evaluation and the public health and educational programs fostered by this company and others, the book should be of interest to many physicians.

LEO A. NASH, M.D.

OFFICE TREATMENT OF THE EYE. Elias Selinger, M.D., Attending Ophthalmologist, Mount Sinai, Cook County and Michael Reese Hospitals. 542 pages. Illus. Price, $7.75. Chicago: The Year Book Publishers, Inc., 1947.

The author has outlined and discussed the many procedures used in the ophthalmologist's office. The material is concise and well organized. The author presents many new and clever procedures used in office practice. This book is especially recommended to the ophthalmologist beginning private practice.

FRANK ADAIR, M.D.

TUBERCULOSIS AND THE FAMILY DOCTOR

Much could be learned about the epidemiology of tuberculosis if we could encourage the participation of more general practitioners in field studies throughout the country. The routine use of the tuberculin test on every person who visits the rural doctor's office would uncover a surprising number of hidden and unsuspected cases of tuberculosis.

The examination of family contacts and a search for the original spreader lead the family physician away from his relentless daily routine into exciting by-paths of epidemiologic investigations. Through the utilization of modern methods of diagnosis and follow-up, the rural physician extends the frontiers of knowledge of this puzzling disease.—HERMAN E. HILLEBOE, M.D., *Journal-Lancet*, June, 1947.

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